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A NEW BURN-MIXTURE.

BY CHARLES RICE.

Among the many applications used in the treatment of burns or scalds, only a limited number are of general utility or are employed in legitimate practice. But there are certain disadvantages connected with all of them, which, in some cases, may prevent the use of the one or the other. The chief aim of the surgeon, in the external treatment of recent burns or scalds, is a perfect exclusion of air by means of a rapidly drying coating, as bland and as flexible as possible.

Of the various mixtures and applications of this kind, the following have best stood the test of time:

Carron Oil, (Linimentum Calcis, U. S. P.).—This old and very useful mixture is most universally used and deservedly popular. Requiring very little preparation, it can be made at a moment's notice from materials obtainable almost everywhere. It is generally applied by means of cotton, which serves to soak up the oil and to prevent its running off. But its defects are, that it dries very slowly and that the dressing is very apt to be disarranged by motion, especially in children. Moreover, the odor arising from it, after prolonged application, is exceedingly offensive. Nevertheless, for common purposes, when nothing better can be obtained, it is of great value.

Collodion.—This can only be used upon burns or scalds of small extent, as the pain occasioned by its application produces a great deal of shock, unless the patient is placed under the influence of an anæsthetic, which is not practical in many cases. In using collodion, the flexible variety alone should be used, to which may be added, with great advantage, a small quantity of carbolic acid, which acts as a local anæsthetic. The proportion which I have generally used is five parts of carbolic

acid in 100 parts flexible collodion—as recommended by Prof. Billroth, and also by Dr. E. R. Squibb. Applied upon small burns, it produces momentary pain, proportionate to the extent of the burn, but as soon as the air is excluded, all pain ceases. It is of its nature only of limited application.

Buck's Burn-mixture.—This mixture, which was introduced a number of years ago at the former New York Hospital, by Dr. Gordon Buck, is prepared after the following formula: Powdered gum arabic 4 oz., powdered gum tragacanth 2 oz., molasses 1 pint, boiling water q. s. to make a mixture of the consistence of honey. When dry, it forms a tough, dark-colored skin, but it requires a considerable time to get dry, and stains the dressings and bed-clothes. It has been used extensively in hospitals.

Lead Paint.—This old application, which had almost fallen out of practice, has of late years again come into vogue. It forms a very good dressing in simple burns or scalds, *where the true skin has not been destroyed* (in which case suppuration generally ensues, necessitating the removal of the application), dries within a reasonable time and forms a tough skin. It is also a singular but well-established fact, that no ill-effects, such as colic or palsy, follow its employment. I have had a more intimate acquaintance with this dressing than I would have desired. In February, 1872, the explosion of a tube in an oil-bath, badly placed, projected into my face and upon my head nearly a gallon of oil, at a temperature of about 400° F. The surgeon being happily within call, the burnt parts were immediately dressed with lead-paint, the good services of which I shall always remember. It occasions, however, serious inconvenience, especially to adults, when applied to the face, or any portion of the head; in fact, if applied to any surface where hairs are apt to grow, it causes excruciating pain by not yielding to the tension and traction of the growing hairs. It should be made of perfectly pure ground white lead, mixed with raw and boiled linseed oil, and patent dryer, but without spirits of turpentine.

Being requested to search for an application which would combine *transparency*, *cleanliness*, *body*, *rapidity of drying and flexibility*, I finally succeeded in finding a combination possessing all these properties, and which has been used for more than a year in hospitals of this city. Its preparation requires a somewhat longer time than most of the above mentioned, but it can be kept ready-made, and requires but a few minutes' time to prepare it for use.

FORMULA FOR BURN-MIXTURE.

Take of the best *white glue* (extra) 15 ounces. Break it into small pieces, add to it 2 pints of cold water, and allow it to become soft. Then melt it on a water-bath, add to it 2 fluidounces of glycerin and 6 drachms of carbolic acid, and continue the heat on the water-bath until a *glossy, tough skin* begins to form over the surface in the intervals of stirring. The mixture may be used at once, after the glue is melted and the glycerin and carbolic acid are added, but when time allows, it is advisable to get rid of a little more of the water, until the proper point is reached. On cooling, this mixture hardens to an elastic mass, covered with a shining parchment-like skin, and may be kept for any time. When using it, it is placed for a few minutes on the water-bath until sufficiently liquid for application (it should be quite fluid). Should it at any time require too high a heat to become fluid, this may be corrected by adding a little water. It is applied by means of a broad brush and forms in about two minutes a shining, smooth, flexible and nearly transparent skin. It may be kept for any time, without spoiling, in delf or earthern dishes or pots turned upside down.

New York, June 16th, 1875.

GLYCONATED EMULSION OF COD-LIVER OIL.

BY GEORGE C. CLOSE.

I am surprised at a remark in the communication of Mr. McElhenie to the effect that glyconin, without oil of almonds, soon separates. I have been in the habit of keeping it for about ten years past, and have kept the same parcel, in one instance, five years without change. I do not follow the French formula exactly, however, but beat the yolks well with a thin spatula previous to adding the glycerin. This is much better than mixing them with the pestle, as the yolks slip from under the pestle and are not easily broken up. I first modified the formula of Dr. Andrews for Dr. Sterling of Brooklyn.

The use of the glyconin for the emulsion was, I believe, original with me. It was communicated by me to the Alumni Association of the New York College of Pharmacy, in January, 1874 (p. 35 of the report). I had at that time used it for several months.

My formula was communicated to the Kings County Medical Association by Dr. Squibb. Dr. George M. Beard and many others were

highly pleased with it. I furnished Dr. Beard with numerous copies of it at his request.*

This formula was published in the "Druggists' Circular" for October, 1874, page 179. I can say, without exaggeration, that I have made up barrels of the emulsion, although the formula has never been kept a secret, but copies have been furnished to all who requested them.

I think the proportion of oil of bitter almonds used by Mr. McElhenie is too large to be safe in all cases. Perhaps I am mistaken in this, however. I always keep a quantity of the glyconin on hand made up. The proportions are four parts, by measure, of the yolks to five of glycerin.

Brooklyn, July 6th, 1875.

MISTURA GLYCYRRHIZÆ COMPOSITA.

BY WALTER E. BIBBY, PH. G.

For the consideration of the readers of the Journal, I desire to present the following suggestions in regard to the preparation of mistura glycyrrhizæ composita. In place of the usual method, which consists in rubbing together with water, licorice, sugar and gum arabic, I propose using the officinal simple syrup and mucilage of gum arabic and a solution of the extract of licorice (made by dissolving the extract in water), of such a strength that f℥ii shall represent ℥i of the extract.

The formula is as follows:

Take of Solution of extract of licorice,	f℥i
Syrup,	f℥v
Mucilage of gum arabic,	f℥xi
Water, a sufficient quantity to make	f℥xiiss
Camphorated tincture of opium,	f℥ii
Wine of antimony,	f℥i
Spirit of nitrous ether,	f℥ss

Mix.

I am not aware that the process I have described has been used be-

* It is due to Mr. McElhenie to state that, under date of June 21st, he communicated to us a letter from Mr. L. M. Royce, correcting the statements regarding the origin of the formula, and requested us to make the necessary alterations in the paper published in our last number, but the letter arrived too late for this purpose. —EDITOR AMER. JOUR. PHAR.

fore, and as it has proven satisfactory as well as a very convenient method, I submit it for publication.

PHILADELPHIA, June 7th, 1875.

NOTE.—The commercial licorice varying more or less in the amount of matter soluble in *cold* water, the suggestion of Mr. H. M. Wilder (see the March number of this Journal, p. 97) to use *purified* extract of licorice only, deserves attention. This purified extract is readily soluble in water, and for convenience in dispensing, a solution of it may be kept on hand of the strength indicated by Mr. Bibby.—EDITOR AMER. JOURN. PHARM.

MEDICATED WATERS.

BY THE EDITOR.

Not less than four theses on the above subject were presented last spring by members of the graduating class of the Philadelphia College of Pharmacy. Although these preparations are of much less importance in American pharmacy than in Europe, they are used to a considerable extent in this country; this is more especially the case with a few of the officinal waters, like those of orange flowers, rose, cinnamon, peppermint and spearmint. The "U. S. Pharmacopœia" directs the first two to be prepared *only* by distillation from the fresh drugs, while the others are made by trituration of the volatile oils with magnesium carbonate and water, an *alternative* process being given for their preparation by distillation from the dry drugs. As early as 1833 ("Amer. Journ. Pharm.," v, p. 110), Mr. Thos. H. Powers called attention to the reaction of the medicated waters made with magnesia upon the salts of alkaloids, and suggested the addition of a little acid to prevent the precipitation of the bases. It is surprising that, since that time, no change has been made in our Pharmacopœia to prevent the contamination of these waters with a body which, in some cases, might cause dangerous results, if the acidulation of mixtures should be overlooked.

To remedy this defect, the use of other substances have been from time to time recommended, which, while effecting the minute division of the oils, rendering them more readily soluble in water, would not be dissolved by this menstruum. Finely-powdered kaolin, glass, silica, pumice-stone and chalk have been recommended for this purpose, or

the volatile oils or their strong acoholic solution were agitated with the distilled water. Mr. G. G. Percival recently proposed ("Amer. Journ. Pharm.," 1873, p. 564) to dissolve the oils in boiling water, and Mr. Jas. Rugan (*Ibid.*, 1874, p. 188), to triturate them with pure paper pulp and afterwards with water.

It is worthy of note that, in Great Britain, where formerly medicated waters were prepared by agitation, or by trituration with an insoluble substance, distillation is now in all cases directed, with the sole exception of camphor water; the fresh or dried drugs being used, or the volatile oils in the cases of peppermint and spearmint water. The reasons for the last-mentioned exceptions are not apparent; at least our experience coincides with the observations made through many years in Europe, that peppermint (and spearmint) water distilled from the herb has a better flavor than that made from the oil, and keeps as well as most other distilled waters, and better than some which are officinal in the various Pharmacopœias. In our opinion, pharmacists who have been using properly prepared medicated waters, distilled from the drugs, will not be likely to discard the process by substituting the volatile oils, which have perhaps in no case the delicate fragrance and flavor of the watery distillates from the drugs.

Some medicated waters are little employed, and in such cases it is proper that the pharmacist should be enabled to prepare them, when desired, at short notice from the volatile oil, without contaminating the product with a substance which may have an injurious influence on the medicine. That magnesium carbonate is not the best that could be selected for this purpose, is evident from what has been said above.

The four essays to which we have alluded confine themselves altogether to what may be called the extemporaneous preparation of medicated waters. Of the processes mentioned, Mr. Percival's hot-water solution is regarded by Edward Plummer and Thaddeus Everhart as yielding, rapidly, unobjectionable waters, while W. L. Kutz expresses himself in favor of using paper pulp, and Geo. M. Shamalia suggests another material, which appears to be deserving of some more extended experiments; this material is purified animal charcoal, which is recommended to be substituted for the magnesium carbonate directed by the Pharmacopœia, and is said to produce excellent waters, free from the objections that may be urged against the use of magnesia.

Regarding the hot-water process, it is obvious that it cannot be well adopted for chloroform, the boiling point of which is much lower than

that of water, nor to camphor, which Mr. R. Rother has proven (1871) to be more soluble in cold than in hot water.

The modifications which we would suggest for the next revision of the Pharmacopœia are, that the medicated waters containing volatile oils be prepared by distillation from the drugs, with a supplementary process for the extemporaneous preparation of some of them from the volatile oils, discarding, however, the use of carbonate of magnesium.

SALICYLIC ACID.

BY J. U. LLOYD.

Take of—

Pure oil of wintergreen,	(3) three parts.
Caustic potassa,	(2½) two and one-half parts.
Muriatic acid,	(4) four parts.
Distilled water,	q. s.

Dissolve the hydrate of potassium in an evaporating-dish with one and one-fourth parts (1¼) parts of water, heat to 108° F., and stir in the wintergreen oil, continuing the agitation until the effervescence ceases. Allow the mixture to remain quiet a few moments until it separates into two layers, the lower of which is impure solution of salicylate of potassium; the upper, a hydrocarbon, which is worthless. Then draw out the solution of salicylate of potassium with a syphon, and gradually add it, with constant stirring, to the muriatic acid previously diluted with ten parts of water. Allow the magma of fine crystals to remain in a cool place twenty-four hours, then pour on a muslin strainer, and, after draining, wash them well with cold distilled water. Purify by dissolving and crystallizing.

Remarks.—Upon adding the wintergreen oil to the solution of hydrate of potassium the mixture at first thickens, but quickly liquefies with effervescence, which continues until the addition of the oil is completed. The reaction is accompanied with an increase of about twenty-four degrees in temperature. The overlaying oily liquid is colorless, while the lower stratum is dark, even though a freshly-distilled and colorless oil is operated upon.

NOTE.—Except in the practical details of the manipulation, the above process, in its outlines, has been proposed by the late Professor Wm. Procter, Jr., in 1854, in this Journal, pp. 59 and 66.—EDITOR AMER. JOURN. PHARM.

EXAMINATION OF GLYCERINS.

BY THOS. ALEX. CHEATHAM, PH. G.

(*Abstract from an Inaugural Essay.*)

Of the five specimens of pure glycerin examined, the table given below shows the result. The manner of proceeding was as follows: The glycerins when purchased had on each bottle the manufacturer's labels, which were not removed during the examination, so as to ascertain of each its individual merits. Their specific gravities were obtained by means of the specific gravity bottle, the usual precautions being observed. Their color was then noted, after which their odor when cold and when heated to the boiling point was ascertained. The reagents were then applied to the glycerins in a dilute condition and their effects noted immediately after addition, five minutes afterwards, three hours afterwards and twenty-four hours afterwards. Five specimens of commercial glycerin were also examined, and the observations were made in a similar manner.

Of all the pure glycerins examined, that of Henry Bower justly heads the list for purity and general appearance. The plan of examination was suggested by two papers read by Prof. Joseph P. Remington, before the American Pharmaceutical Association, in 1870 and 1871, and published in their proceedings for those years.

The following table shows the condition of the glycerins 24 hours after adding the reagents:

TABLE OF RESULTS.

Manufacturer.	*Sp. gravity.*	*Colors.*	*Odor, cold*	*Odor, heated.*
Bower	1·250	Colorless.	No odor.	Very slightly empyreumatic.
Hartman, Laist & Co.	1·255	Colorless.	No odor.	Empyreumatic.
Price	1·255	Slight Color.	No odor.	Slightly empyreumatic.
Sarg	1·249	Colorless.	Fatty.	Slightly fatty.
Gordon	1·248	Colorless.	Empyreumatic.	Empyreumatic.
Commercial	Varying. 1·246 to 1·256	Colorless.	Varying.	Varying; empyreumatic and fatty.

TABLE OF RESULTS—(Continued).

Manufacturer.	*With Nitrate Silver.*	*With Oxal. Ammon.*	*With Chlor. Barium.*	*Ferrocy. Potass.*	*Glucose.*
Bower	Slight blue color; no precipitate.	No precipit.	No precipit.	No change.	None.
Hartman, Laist & Co.	Blue color; no precipitate	No effect.	No precipit.	"	"
Price	Brownish color; slight precipitate.	No effect.	No precipit.	"	"
Sarg	Bluish color; no precipitate.	Slightly opalescent.	No precipit.	"	"
Gordon	Slight brown color; no precipitate.	No effect.	No precipit.	"	"
Commercial	Reaction varying.	Varying.	No precipit.	"	"

CONVERSION OF BRUCIA INTO STRYCHNIA.

BY PROF. F. L. SONNENSCHEIN.

Brucia $C_{23}H_{26}N_2O_4$ and strychnia $C_{21}H_{22}N_2O_2$ differ, apparently, considerably in their composition; but the former may be easily converted into the latter. Referring to the formulas, it will be seen that strychnia is produced by combining brucia with $4O$ and eliminating $2H_2O$ and $2CO_2$. This is effected as follows: Brucia is moderately heated with four to five times its weight of diluted nitric acid, when a red coloration will be produced and gases evolved, which cause in a mixture of barium chloride and ammonia a white precipitate of carbonate of barium. The red solution is concentrated in a water-bath, supersaturated with potassa and agitated with ether, which, on spontaneous evaporation, leaves a reddish mass containing a red coloring matter, a yellowish resin and an alkaloid, which is obtained pure by dissolving in an acid and crystallizing. This base has the intensely bitter taste and other properties of strychnia, gives the characteristic reactions with potassium chromate, cerium oxide and sulphuric acid, and yields with chlorine the sparingly soluble compound. The muriate crystallizes in fine, silky needles, from which 9·20 per cent. chlorine were obtained. $C_{21}H_{22}N_2O_2HCl$ contains 9·58 per cent.

The conversion of brucia into strychnia is not only highly interesting, but it is likewise of great importance in forensic analysis, proving again that in such cases the employment of oxidizing agents is admissible only with great caution. A student who had received for

analysis a mixture containing, among other substances, brucia and nitrate of lead, employed the process of Stas and Otto for the separation of alkaloids, and found strychnia instead of brucia, which had been oxidized by the liberated nitric acid.

If strychnia is heated with a strong base, like potassa, soda or baryta, for some time in a sealed glass tube placed in a water-bath, a body is obtained which does no longer show the reactions of strychnia, but resembles brucia in its reactions. The experiments on this decomposition, which is likewise of importance in forensic analysis, are not yet concluded.—*Pharmac. Centr. Halle*, 1875, *No.* 21, from *Viertelj. f. gerichtl. Med.* J. M. M.

THYMOL AS AN ANTISEPTIC AND ANTIFERMENTATIVE.

Herr S. Lewin has lately made some experiments in Prof. Liebreich's laboratory, in Berlin, on the antiseptic and antifermentative properties of thymol.

This substance, the formula of which is $C_{10}H_{10}O$, belongs to the benzol group; it forms white crystals of a highly aromatic odor. A solution of one part in 1,000 of hot water is of sufficient strength for all purposes.

Comparative experiments with carbolic and salicylic acids, showed that thymol possessed much greater power than either of these acids in arresting fermentation in a solution of sugar after the addition of yeast.

The addition of thymol to milk caused coagulation to appear twenty days later than in milk to which a similar quantity of water had been added, and at the end of five weeks there was still no trace of vegetation. While filtered egg albumen underwent decomposition in three or four days on exposure to the air, albumen to which thymol-water had been added, did not present the slightest sign of putrefaction at the end of eleven weeks, and an aromatic odor was still perceptible.

Herr Lewin also found thymol to arrest putrefactive change in bony substances for five weeks.

GLEANINGS FROM THE EUROPEAN JOURNALS.

BY THE EDITOR.

Arsenious Acid in Veterinary Practice.—According to a decree, dated February 26th, 1875, arsenious acid, intended for the treatment of domestic animals, must hereafter, in France, be dispensed only after having

been previously mixed with 2 parts of ferric oxide and 1 part of socotrine aloes to 200 parts of arsenious acid, the materials to be triturated into a uniform powder.—*Bull. Commerc.*, April, p. 184.

A Periodical Chalybeate Spring.—In a paper by Prof. Aug. Husemann, published in "Archiv d. Pharm.," Feb., the author notices the interesting fact, that the waters of the two chalybeate springs of St. Moritz in Swizerland varies somewhat during the summer in the amount of saline matter and carbonic acid gas; the amount of carbonic acid and ferrous carbonate rapidly decreases after the latter part of September, the iron disappearing entirely during the winter months; traces of it are found again in April, when the iron and carbonic acid gas rapidly increase until, in May, they are found again in their average proportion for summer.—*Schweiz. Wochenschr. f. Pharm.*, No. 18.

Wafer Capsules for Powders.—B. Studer, Jr., describes a small press intended for closing the wafer capsules, and which is claimed to be preferable to the one mentioned in the May number, p. 213, on account of its smaller size and greater compactness, its durability (absence of springs) and cheapness.—*Ibid.*, No. 21.

Commercial sulphate of quinidia frequently contains, according to O. Hesse, quinia, cinchonidia or cinchonia. For the detection of the last two alkaloids, 1 gram of sulphate is first treated with a mixture of two measures of chloroform and one measure of strong alcohol, in which the salt should slowly, but completely dissolve; inorganic impurities would be insoluble. One part of the salt is now digested with 40 parts of water at 60° C. (140° F.), and 3 parts of pure Rochelle salt are added. After one hour the liquid is filtered from the crystalline precipitate, containing quinia and cinchonidia. 0·5 or 1 gram of iodide of potassium, added to 20 c.c. of the filtrate, will indicate the presence of quinidia (Hesse's conchinia), by a precipitate occurring within an hour, and the filtrate therefrom shows the presence of cinchonia by the white precipitate with ammonia. A mixture of cinchonia alkaloids, tested in this manner, will indicate not less than 6 per cent. of quinia and cinchonidia, and 2 per cent. of quinidia.—*Ibid.*, No. 23, from *Annalen d. Chemie.* Compare also Hesse's paper in *Amer. Jour. Pharm.*, 1869, p. 421.

Active Principles of Digitalis.—Schmiedeberg has separated from commercial digitalin, prepared from the seeds, four well characterized principles, and afterwards obtained the most interesting of the same, the

digitoxin, directly from the leaves, and found it to constitute the principal portion of Nativelle's crystallized digitalin:

1. *Digitonin*, $C_{31}H_{52}O_{17}$, is an amorphous body, resembling saponin, soluble in water, but insoluble in cold absolute alcohol, ether, benzol and chloroform; it yields the following products of decomposition: *digitoresin*, *digitoneïn*, *digitogenin* and *paradigitogenin*.

2. *Digitalin*, $C_5H_8O_2$ granular, but not crystalline, insoluble in cold, soluble in boiling water, slightly in ether and chloroform, but easily in alcohol, spirit of chloroform and diluted acetic acid; it yields *digitaliresin*.

3. *Digitaleïn* was obtained as a yellowish mass, yielding foaming solutions with water, somewhat soluble in chloroform. When boiled with diluted acids, it yields sugar and probably digitaliresin.

4. *Digitoxin* $C_{21}H_{33}O_7$ is insoluble in water and benzol, little soluble in ether, freely, but rather slowly, in chloroform, readily in absolute alcohol. It is not a glucoside, and is the well crystallizing principle, directly obtained from digitalis. Its decomposition product, *toxiresin*, is readily soluble in ether.—*Ibid.*, No. 24, from *N. Repert. Pharm.*, xxiv, p. 89.

Adulteration of Tea.—The leaves of *Epilobium angustifolium* are extensively used in Russia for the adulteration of tea. The plant grows particularly in places where the ground has been burned over, and extensive forests are sometimes fired by the peasants, merely for the purpose of obtaining a large supply of the leaves for about four or five years, when the soil will cease to produce the plant. The dried leaves are sold for from four to six roubles a pud (40 lbs.), are largely used in Russia for the adulteration, and, by the poorer classes, in the place of tea; exhausted tea-leaves are often mixed with these leaves and again sold as tea. The leaves are also exported for the same purpose. They yield a darker infusion than the same weight of tea-leaves, and alcohol produces in it a precipitate of mucilage, while that of tea remains clear. Softened by water and unfolded, they are readily distinguished from tea-leaves.—*Zeitschr. Oesterr. Apoth. Ver. No.* 10, from *Phar. Zeitschr. f. Russland.*

Dangerous Adulteration of Anise.—A large quantity of anise from the interior of Russia was found to be largely mixed with the fruit of *Conium maculatum;* it had been destined for exportation to Holland.—*Ibid.*, from *Ibid.* See, also, *Amer. Jour. Phar.*, 1861, p. 408.

Carnauba Root.—Chas. Symes describes this root, which was a short time ago received at Liverpool with the statement that its therapeutic qualities rival those of sarsaparilla.

The root is that of *Corypha cerifera*, a wax-bearing palm, growing on the shores of the Rio Francesco in the Brazils; it is several feet in length, and has an average thickness of three-eighths of an inch, of a mixed greyish and reddish-brown color, giving off here and there small rootlets. The cortical portion is comparatively thick, somewhat friable and loosely surrounds the meditullium which encloses the pith; thus a traverse section somewhat resembles in appearance an exogenous stem. Its infusion is similar in color to that of wild cherry bark, possesses an agreeable, slightly bitter taste and an odor not unlike that of sarsaparilla; its color is slightly deepened, but no precipitate occurs on the addition of liq. potassæ; neither on the addition of dilute acids. Tinct. ferri perchlor. does not strike a black, but brownish color, gradually followed by turbidity and the formation of a brown deposit. The decoction is not affected by iodine, indicating the absence of starch; a drop of it concentrated on a porcelain slab and treated with strong sulphuric acid, produces an olive green, slowly changing to a brown color. It yields 25 per cent. of a reddish-brown extract possessing a decidedly bitter taste.—*Pharm. Jour. and Trans.*, Feb'y 20.

The Active Principle of Aloes—Dr. Wm. Craig read at the March meeting of the North British Branch of the Pharmaceutical Society of Great Britain a lengthy paper on this subject, and arrived at the following conclusions:

1. Aloin may, by exposure to the air, undergo considerable chemical change without losing its physiological action as an active aperient.

2. The resin of aloes, when thoroughly exhausted of aloin, possesses no purgative properties, and therefore cannot be the active principle of aloes.

3. The resin of aloes is not the cause of the griping which sometimes follows the administration of the drug.

4. Aloin is an active aperient, and is, in all likelihood, the *active* principle of aloes.

The author argues in favor of admitting aloin into the Pharmacopœia.—*Ibid.*, April 17.

Botanical source of Rhubarb.—Maximowicz does not dispute the fact, that *Rheum officinale* of Baillon yields a commercial rhubarb (see

"Amer. Jour. Phar.," 1874, p. 154); but he contends that the drug, which was known here as Turkey or Russian rhubarb, and which came through Siberia by way of Kiachta, was obtained from *Rheum palmatum* var. *Tanguticum*. His plants were, in 1872–3, collected by Przewalski, in the vicinity of Lake Koko Nor, where the plant was formerly extensively cultivated.—*Ibid.*, April 3d; *Regel's Gartenflora*, January.

Chemical Examination of Jaborandi.—M. Byasson has published in *Rép. de Phar.*, March 25, the results of his investigation of jaborandi leaves, from which it appears that they contain a volatile oil, an acrid resin, and an alkaloid, to which the properties of jaborandi are due. It was prepared by concentrating the tincture, mixing the aqueous filtrate with lime, and exhausting the desiccated mass with chloroform, which left it as a viscous aromatic mass, soluble in chloroform, ether, absolute alcohol, ammoniacal water and dilute acids. The author proposed the name of jaborandina; but since this name has been already appropriated (see "Amer. Jour. Phar.," May, p. 214), M. Holmes suggests to call it pilocarpina.—*Ibid.*, April, p. 174.

A. W. Gerrard has experimented with jaborandi bark, and has arrived at similar results. The alkaloid is prepared by evaporating the aqueous solution of the alcoholic extract to the consistence of a soft extract, adding ammonia in slight excess and exhausting with chloroform. Half a grain was administered and produced the full effects of the drug. The bark contains also tannin.—*Pharm. Jour. and Trans.*, April 17 and May 1.

Chloral Hydrate.—Mr. Oré states: A very small quantityof carbonate of sodium is sufficient to remove the acidity of chloral hydrate in solution and to render it alkaline. There is a slight disengagement of carbonic acid, and some chloride of sodium is formed. Comparative experiments have shown that, whilst chloral hydrate retards the coagulation of blood, chloral hydrate, thus rendered alkaline by carbonate of sodium, entirely prevents it. The addition of the soda, he believes, does not at all interfere with the anæsthetic properties of the chloral.—*Journal de Pharmacie.*

THE SALICYLATE AND CARBOLATE OF QUINIA.*

BY JULIUS JOBST.

In a communication to the "Pharmaceutische Zeitung" (No. 11, 1875), Schering states that salicylic acid forms with quinia a salt in-

*"Neues Repertorium für Pharmacie," xxiv, 193.

soluble in water, and soluble in alcohol, which is not crystallizable. The author of this paper, on the contrary, states that an aqueous solution of hydrochlorate of quinia gives in the cold with salicylate of ammonia (prepared from Kolbe's salicylic acid) a cheesy precipitate of salicylate of quinia, which can afterwards be obtained crystallized from alcohol in wonderfully fine, perfect prisms in concentric groups. The same compound is formed when an alcoholic solution of quinia is mixed with an alcoholic solution of salicylic acid to complete saturation, and the alcohol is afterwards slowly evaporated.

The salicylate of quinia is anhydrous. A determination of the quinia by the author gave the formula $C_{20}H_{24}N_2O_2$, $C_7H_6O_3$. The salicylate of quinia dissolved in a small quantity of water, upon the addition of some dilute hydrochloric acid, and was precipitated with ammonia. The resulting precipitate of quinia was collected upon a filter, and the quinia dissolved in the ammoniacal filtrate, extracted by means of ether. The above-mentioned formula required 70·12 per cent. of quinia. The first experiment gave 69·66 per cent., the second, 70·17 per cent.

Salicylate of quinia dissolves in 225 parts of water at 16° C., in 20 parts of 90 per cent. (by volume) alcohol at 13° C., and in 120 parts of ether at 16° C.

Since the crystallized salicylate of quinia could be so easily obtained, the author turned his attention to the carbolate, which has already for some time been in no inconsiderable demand for medicinal purposes, but which hitherto has only been met with in pharmacy in a pulverulent form, and of varying composition and properties. He reports that he has succeeded in preparing the carbolate of quinia, both from water and from alcohol, in slender acidular crystals. Dried at 130°, the carbolate gave the formula, $C_{20}H_{24}N_2O_2$, C_6H_6O. This formula requires 77·51 per cent. of quinia. Three analyses gave respectively, 77·52, 77·32 and 77·88 per cent.

Carbolate of quinia dissolves in 400 parts of water at 16° C., in 80 parts of 90 per cent. alcohol at 13° C., and slightly in ether.

If it could be assumed that the quinia salts of salicylic and carbolic acids have a similar therapeutic action, then the greater solubility of the salicylate would gain for it the preference. In any case the author considers that henceforth for the carbolate only the definite crystallized compound should be used in medicine.—*Pharm. Journ. and Trans.*, June 12th, 1875.

GURJUN BALSAM.

BY WILLIAM GILMOUR.*

Gurjun balsam, or as it is sometimes called, wood oil, though exciting little more than a passing notice, has been known for some considerable time, it having been noticed, so far as I am aware, for the first time more than twenty years ago in the pages of the "Pharmaceutical Journal," as a supposed new kind of balsam of copaiba.†

It was correctly traced some time later to its sources by Mr. Hanbury, who also mentioned some of its peculiarities and distinguishing characteristics, comparing it with balsam of copaiba, to which it is closely allied, and which it strikingly resembles.

It is obtained by incision from the *Dipterocarpus lævis*, and other trees of allied genera—indigenous in the hot damp Indian forests—and can be obtained in such quantities that the natives employ it for many of the purposes to which we in this country put some of the more common oils.

I have been induced to call your attention to this substance from the most remarkable results obtained by its use, first in the treatment of leprosy in India and since then in our own country in cases of skin disease. Through the kindness of Mr. Wm. Dougall, brother to the discoverer of its important therapeutical effects in cases of leprosy, I was lately afforded a perusal of his official report to the Indian government on the subject—a report at once so exceedingly interesting in itself and valuable in its results that I felt assured a very brief summary of it would prove acceptable to you.

Passing over, then, Dr. Dougall's account of the condition in which he everywhere found that most miserable and wretched of all the many miserable and wretched in India, the leprous, together with his earlier treatment and experiments for their alleviation, we come to the point at which, by a happy thought (for it seems to have been nothing more) he was induced to try the effects of a course of this balsam. Noticing a decided mitigation of all the more marked and worse characteristics of the disease under its influence, he was encouraged to begin a more extensive and systematic use of it in the Haddo Leprous Hospital, Andaman Islands.

* Read before the North British branch of the Pharmaceutical Society, March 5.

† See "Amer. Journal of Pharmacy," 1856, 159.

Here, as a palliative remedy, the gurjun balsam very soon asserted its power, the most extraordinary results ensuing in every case brought under its influence. Of twenty-four cases which Dr. Dougall had under treatment in this hospital during the six months previous to the publishing of his report—many of these cases of the very worst kind—every one of them had decidedly benefitted by its use; *every ulcer, without exception, having healed up and not broken out again;* the most marked benefit, however, having been derived by those suffering from the anæsthetic form of the disease. Each one of the twenty-four cases is minutely narrated and dwelt upon in the report, and however bad or hopeless they might appear at the commencement of the treatment with the wood oil, they yet soon yielded to its power. One, for example (just taking a case at random from the report), had been seven years a leper, had anæsthesia of right fore arm and both feet; the whole of the hands had been eaten away, as also portions of two toes of the right foot, and the stumps were open sores when the oil was given to him for the first time. In a few months after, sensation had been recovered in all the parts formerly affected, and all the sores had quite healed up.

Another had anæsthesia of the whole surface of the body, including both hands and feet—the face and ears only being excepted. The ulcers soon healed up, and sensation was shortly after restored to the whole body; this man being apparently in perfect health, and able to run, walk, or work with any man of his age. The parts affected heal evenly, the new skin being just a shade lighter in color than the normal tint.

Its mode of use is somewhat novel. Dr. Dougall, after trying various plans, ultimately fixed upon a mixture of equal parts of lime water and the balsam, as being in every respect the most suitable; and this emulsion he not only gives internally, but uses also freely as a liniment.

The liniment was rubbed over the whole body night and morning, whilst the emulsion was given internally to the extent of four drachms three times in the day, in which doses he found it operated as a mild tonic, exciting at the same time a distinct diuretic and evacuant effect.

The interest which these results have excited may be inferred from the fact that Government, as lately reported in the "Pharmaceutical Journal," has called particular attention to the report, with the view of giving it the widest publicity possible, inviting at the same time the co-operation of all local governments and administrations towards the

extension of its use, with the request also that careful reports on the results may be submitted at the end of a year.

Whether this remedy may ever become popular in this country for skin diseases, or whether it may be as successful here for such as it has been in India for the more inveterate leprous form, are questions which time and experiment alone can determine. But, meantime, it is exciting no little interest in medical circles, and Professor Erasmus Wilson lately reported the most encouraging results from its use in cases of painful eczema, in lupus, and in cancer; and further reported the case of a lady, who had not obtained sleep without the use of narcotics for weeks, until the liniment was applied, when she was relieved of all pain and obtained natural sleep.—*Pharm. Journ. and Trans.*. Mar. 13.

A CONVENIENT APPARATUS FOR HOT FILTRATION.

BY H. CARRINGTON BOLTON, PH. D.

(*Read before the New York Academy of Sciences, May* 10, 1875.)

Every working chemist has experienced the need of a convenient apparatus for hot filtration. Hot saturated saline solutions which crystallize on cooling in the filter or in the neck of the funnel, and viscid liquids possessing the necessary mobility only so long as a higher temperature than the average is maintained, render the employment of some form of apparatus for hot filtration indispensable. While much attention has been given of late to the construction of apparatus for *rapid* filtration, as the innumerable forms of water pumps and steam injectors abundantly show, little has been done towards improving the existing forms of apparatus for hot filtration or the contrivance of new ones.

Two kinds of apparatus have come under our observation. The first of these, invented by Dr. Hare, is the well-known funnel support usually constructed of tinned iron with double walls and a conical aperture for inserting a glass funnel; the space between the walls being filled with water or other liquid, it is kept at a boiling heat by a lamp placed under a cavity shaped like an inverted funnel. A more compact form of the same apparatus was contrived by Plantamour, in which the metallic box is given the form of a cone, and heat is applied to a hollow cylindrical projection filled with the liquid employed, and communicating with the space between the double walls..

While this apparatus is well adapted to the use of pharmaceutists, or

for the purposes of the manufacturer, it is not suited to the wants of the analytical chemist. The first form occupies much space, and both forms must be had in great variety of sizes to fit funnels of various dimensions. A small funnel is nearly lost to view in a large jacket, and a large funnel is not heated by a small one. Then again, only well-made funnels, whose sides are inclined at an angle of 60°, will fit the conical opening. Moreover, the fact that the apparatus is constructed of metal is in itself a disadvantage. Only extraordinary care will keep the metal clean and bright in the atmosphere of a laboratory. The disadvantage could be largely overcome by nickel-plating the metallic box, but we have not seen this luxury introduced. In the filtration of liquids, giving rise to very acid fumes, the use of a metallic jacket is hardly admissible.

The second apparatus alluded to is that contrived by Dr. A. Horvath, and described in the "Annalen der Chemie und Pharmacie," vol. clxxi, page 135, 1874.* A tube of soft lead, one centimetre thick, is wound around a funnel in the form of a spiral, one end being connected by a tightly-fitting cork with a flask placed at a convenient distance, and the other end of the leaden pipe communicating with a recipient for the escaping vapors. Steam being generated in the flask, it passes through the leaden tube and warms the funnel and contents. This contrivance may work well, but is not very convenient; the inventor strangely enough adds that by employing ether, alcohol, carbon disulphide, benzol or anilin, in place of water, filtration can be carried on at any desired temperature. The question naturally arises why select liquids having such low boiling-points as ether (35·7° C.) and carbon disulphide (46·6° C.) to effect *hot* filtration; surely the cases are rare where the temperature could not be moderated, if desired, by generating steam less rapidly. Then, too, it strikes us that the atmosphere of a laboratory, where a dozen or more solutions are warming by the uncondensed vapors of carbon disulphide, would be anything but agreeable in its effect on the olfactors of the occupant! This suggestion of the respected author is apparently a case of pen-and-ink chemistry, rather than the result of practical experience.

There seems to be room, then, for a simple, cleanly, portable and inexpensive apparatus for keeping the contents of a funnel hot while filtering, and it is believed that these requirements are filled by the new apparatus described in this paper.

* "American Journal of Pharmacy," 1874, p. 275.

The materials are found in any ordinary laboratory. Select a small funnel with a long stem, and a larger funnel with a wider throat, and cut the stem of the larger funnel short; slip a piece of India-rubber tubing of the required size over the stem of the smaller funnel, and then insert it in the larger one so that it fits water-tight. The inner funnel should project about half a centimetre above the edge of the outer, and as much below the stem of the latter as it admits. We have found the three sizes named below sufficient for all operations of analytical chemistry, though larger ones may be used for preparations.

Dimensions given in centimeters; the first figures give the greatest diameter of the funnel, and the second its length including stem.

	Outer Funnel.	Inner Funnel.
No. 1	7 × 6½	4 × 10
No. 2	10½ × 9½	6½ × 12½
No. 3	13½ × 13	10 × 17

Steam generated in a flask of about one litre capacity and conducted by means of a glass tube into water filling the space between the two funnels, warms the filter on the inner funnel with its contents. In one experiment the water in the outer funnel marked a temperature of 97° C. and the liquid in the inner one 76° C. The temperature in the inner funnel may be greatly increased by covering it with a convex glass, or by employing a saline solution in the outer funnel.

As a matter of course, water condenses in the outer funnel, and must be removed from time to time. In the case of funnels No. 2 it accumulates at the rate of 30 to 35 c.c. in half an hour when boiling vigorously. This seems at first sight to be an objection, but the superfluous water can be so readily removed with a pipette or a siphon that it does not have much force. Or the accumulating water may be drawn back into the steam generator through diminished pressure by simply removing the lamp beneath the flask. In this case, the end of the tube should plunge but little below the surface of the water in the outer funnel, else the latter will be completely emptied.

Actually the operator is not at all annoyed by the necessity of attending to this point, for the filtration requires his constant presence. Should the outer funnel be filled with distilled water in the outset, an overflow would not prove serious; since the inner funnel stands higher than the outer, any disturbance of the precipitate in the former by accumulating water is out of the question.

The great compactness and cleanliness of this apparatus make it

available in quantitative analysis, and we have used it for some time with great satisfaction. After washing a precipitate on the filter it may be dried very speedily by simply continuing the heat; the dried filter removes easily, and so the two funnels once arranged need not be disconnected. It is true that this point holds good in any form of apparatus for hot filtration.

Other advantages will occur to those using the apparatus, such as the transparency of the outer vessel, the total absence of metal, and the increased rate of filtration consequent upon the higher temperature. The double funnel may be connected with a Bunsen water-pump or other apparatus for rapid filtration.

In washing precipitates with hot water we have also found it feasible to direct the steam from a small generator directly into the filter itself; if care be taken to moderate the pressure, the precipitate is washed with hot distilled water without danger of loss by spattering, and this works almost automatically.

School of Mines, Columbia College, N. Y., April, 1875.

—*American Chemist, May*, 1875.

UNPROFITABLE READING.

BY JOSEPH INCE.

By reading is here included and understood whatever enters into the mode of preparation adopted in a course of study.

There are two distinct kinds of intellectual improvement: book-learning, derived from a printed page; and technical knowledge, drawn in part from literary sources, and largely from practical observation. With the first—popularly termed classical education—we have nothing here to do; it is with the union of the practical and the literary with which we are concerned. Both may fail, not so much, nor half as much, from want of application as from unprofitable labor.

The essentials of all successful reading may be briefly stated, as they commend themselves for adoption, and are universally acknowledged. Order is heaven's first law and the student's hope. It implies systematic work, thoughtfulness and a clear head; it implies, also, continuous, well-regulated exertion; and that it begets a love for work itself is an experience to which there is no exception.

Order is a mental quality—the power of effecting an equal distribution of efforts and ideas; system is the same power applied to mechan-

ical arrangement. The two should be made one, and both may be infinitely strengthened by cultivation. Lastly, there is the old English term called labor, without which all other virtues, major and minor, are ineffectual. This labor, with its intellectual order and its mechanical system, is weakened by certain well-intentioned practices that have been adopted in good faith, chief of which, as far as my knowledge goes, is the time wasted in taking notes. I would venture to appeal against this unwise habit, which is still existent. In the cumbrous old days of scholarship, when years were spent on Latin verse, and protracted processes of learning were accepted as proof of diligence, the learner gazed with pride on his folio manuscript of annotations; but in this age of admirable text-books their use has been superseded.

I regret that during nine long years of classical, not of pharmaceutical study, two hours every day were de-utilized in this unprofitable toil.

A subject fresh to the compiler is not likely to be correctly noted; attention is distracted from the lecturer, whilst in physical and experimental subjects the value of the illustrative demonstration is lost in the vain attempt to catch the *ipsissima verba* of a sentence. A single experiment, done afterwards by the learner's own hands, or a plant dissected in confirmation of a botanical allusion, is a far more reliable mode of recollection than a page of disjointed and hastily compiled memoranda.

The time that lies at the disposal of most of us is of so limited a nature that it is wisdom to economize it to the utmost. And can the student hope that his best *memoria technica* will beat or equal the instructions of a well-digested manual?

Note-taking, except the merest headings, is to be deplored as representing the maximum of trouble with the minimum of result. But if there be a gain in seizing *currente calamo* a lecturer's expressions, let me strongly urge the use of short-hand, and say, from personal knowledge, that its difficulties have been enormously overrated. Three months, with one hour's daily application, will smooth its opening embarrassments; and three months more at the same rate will give facility in practice. Pitman's system is readily acquired, and its characters are not difficult to decipher. I put my six months' phonography against nine years irksome note-taking, and I have not the courage to estimate the saving in pure weariness.

But if this dreary custom of taking notes forms the first illustration

of unprofitable reading, there is another which appears closely in the track. I feel sure that a student does himself injustice who follows too implicitly one book, because even a many-sided teacher contracts a mannerism both of expression and of thought; because he is strong in some points and weak in others, and because his teaching bears more or less distinctly the traditional impress of his own school. It is, moreover, no imaginary danger that a beginner may attach undue importance to a stereotyped mode of explanation, and may thus unwisely limit the range of his conceptions. He is tempted to believe in no other prophet than the one through whom he first learnt the rudiments of his faith. It is manifestly impossible that one writer should, like a living kaleidoscope, reflect every combination of light and color. This is an unreasonable expectation, and he who would eschew unprofitable reading must gather his information from varied sources. A professor, speaking from an academic chair, is compelled in great measure to be the exponent of a certain curriculum. He acts wisely and from necessity, for he is bound, as a public man, to present his young audience with such a classified arrangement of facts and theories as he may deem most instructive.

Nothing more distinguishes our modern period than the simplicity and excellence of these prepared discourses, but obviously each man *does* approach his subject with strong individual leanings, and that is the very secret of his strength. One reasons lucidly about chemical equations; a second explains the theory of the phosphorus acids in an unequalled manner; a third justifies the reputation of Owen's College by the conciseness of his descriptions and the skill by which so many facts are presented in so small a space. Neither one man, still less one book, can wander into these different paths all leading to a common road, but the learner, while exclusively he follows none, will lessen his labor and not increase it by comparing, combining, and collating the separate instructions which men can give. This, which I have often done for others, I devoutly wish others would accomplish for themselves, a sentiment which leads directly to a theory long and conscientiously entertained. Technical study has three stages of development, the learning or the storage; then the storage classified; and last, the practical application.

To enter with advantage on our own special branch, the student should have done with his preliminary education, and not be hampered with the rules of English composition, his decimal fractions, or the

Latin verbs. Then let him learn and store, by lecture courses, by printed books, by laboratory work, by experiment, by field excursions, by conversation, friendship, and sparingly by scientific meetings. Quickly comes the second stage—the time ripe for classification; then, and not before, the mode of learning changes, not the act, and the task before the learner is to investigate his stores. Let him boldly take his accumulated rough or neatly copied memoranda, and consign them to oblivion; and with his better knowledge and acquired experience let him work out his own digest of things worthy of remembrance. Plan there must be, for the mind cannot, without superhuman effort, recollect a mass of miscellaneous facts; and plan there must be if the third stage, that of practical application, is to be attained.

May we not say with truth that it is on the right use of this second period that the future hangs? May we not say that the more the facts and the greater the storage, the better and more philosophic will be the summary? May we not add, that where in youth there has been this storage, and subsequent orderly arrangement, we may predict with confidence a successful present issue, and an awakened pleasure in these pursuits such as is destined to endure.—*The Chemist and Druggist*, (*London*,) June 15, 1875.

REPORT OF THE DEVELOPMENT OF THE CHEMICAL ARTS DURING THE LAST TEN YEARS.*

BY DR. A. W. HOFMANN.

The Elements of Water.† By Dr. A. Oppenheim.

Oxygen.—Like the evolution of human life, the development of every chemical art is connected with oxygen. Directly or indirectly, it intervenes in every manufacturing operation. With equal necessity, life and technology derive it from that exhaustless source of all being, the atmosphere. Furthermore, no discovery has had a greater significance for the history of culture than that of the material nature of the air, and the discovery—the centenary of which we commemorate this year—of its most important constituent, oxygen gas.‡ To the same

* Berichte über die Entwickelung der Chemischen Industrie während des letzten Jahrzehends."

† "Die Elemente des Wassers."

‡ "On the 1st of August, 1774, I endeavored to extract air from mercurius præcipitatus per se."—Joseph Priestley, "Experiments and Observations on Air," ii, 106 See also Kopp, "Geschichte der Chemie," iii, 200 and 204.

discoveries chemical industry owes its rational foundation and the possibility of its advancement, and thus both the existence and the progress of technology are linked to the same element. What, in comparison with these incalculable benefits, are the advantages which pure oxygen gas has conferred upon industry by its direct application? To give a reply to this question is the object of the following lines, and as no reports or text-books have hitherto treated this subject in a connected manner, we may venture to exceed in point of time the boundaries of this report.

Lavoisier, who first recognized in its full extent the importance of oxygen, took the first successful step in its technical application. "It is evident," he writes,* "that atmospheric air is not the most suitable to increase the action of fire, and that, if we drive a current of air upon ignited fuel by means of bellows, three parts of injurious, or at least useless, gas are driven in for one part of the serviceable kind of air, and that, therefore, if the latter could be used for combustion in a pure state, the action of the fire would be much enhanced. This idea has doubtless occurred to many persons prior to myself, and I hear that Archard, the celebrated chemist of Berlin, has carried it into application;† but it is still needful to devise a cheap and convenient apparatus."

For this purpose, Lavoisier used at first bladders fitted with tubes and taps. "I made," he continues, "with a knife, a hole three to four lines deep in a large piece of charcoal, and laid in it 6 grs. of platinum, set fire to the charcoal at an enameller's lamp by means of a blowpipe, opened the jet of my apparatus, and blew pure oxygen into the hollow. The charcoal burnt very rapidly, with detonation as it produces with melted saltpetre, and with a dazzling brilliance; and in a few moments the platinum melted into granules, which then united into a ball. The fusion was equally successful, whether the ordinary platinum of commerce was taken or such as had been previously freed from magnetic particles by means of a magnet. Hitherto, platinum has not been melted."

Lavoisier improved his apparatus in the same year,‡ in conjunction with Meusnier, and produced a gasometer consisting of two boxes, and

* "Mémoire sur un Moyen d'Augmenter Considerablément l'Action du Feu et de la Chaleur dans les Operations Chimiques"—"Oeuvres de Lavoisier," ii, 425.

† *Memoiren der Berliner Academie*, 1779. "Sur un Nouveau Moyen de Produire avec une très Petite Quantité de Charbons une Chaleur," &c.

‡ Lavoisier, "Oeuvres," ii, 432.

which, on a small scale, much resembled those now in use at gas-works. About the same time, Saron constructed two blowpipes (*chalumeaux*), one of which delivered oxygen and the other hydrogen. By their means, however, Lavoisier did not succeed in fusing platinum.* He hoped, however, to construct an improved blowpipe, in which the oxygen should surround the hydrogen, and thus was developed the plan of the oxyhydrogen blowpipe, which has rendered such essential service in the metallurgy of platinum and in soldering lead.

The application of oxygen for melting platinum remained dormant until, in 1857 to 1859, Deville and Debray made known their important investigations† on the platinum metals, and introduced the industrial fusion of platinum. The autogenous soldering of platinum, and the production of fused ingots on the large scale, was first carried out by Johnson, Matthey & Co., of London, and also by Heraeus, of Hanau, in Germany.

Debray's and Deville's experiments led, above all, to the discovery of a refractory material for crucibles and furnaces. For this purpose quick-lime offered itself, which has the further advantage of retaining the heat as completely as possible. The chemists above-named increased the heat further by leading the flame from above directly upon the surface of the metal, and determined the amounts of oxygen and hydrogen theoretically and practically necessary for melting 2 kilos. of platinum, *i. e.*, by calculation, 55 litres of oxygen and 110 of hydrogen. The amount actually fused was more than 1 kilo., so that—a highly favorable result—not 50 per cent. of the heat produced was wasted. These experiments had a further bearing upon the industrial history of oxygen, as they led to the comparison of the cost of the methods of its production and to the search for a less expensive process. We may divide the known methods into chemical and mechanical, subdividing the former into continuous and interrupted procedures.

Up to this time, the following methods of preparation were either in use, or had been proposed: The original process of Priestley, heating oxide of mercury, of course, the most expensive, and the least suited for technological purposes; then Scheele's method, treatment of peroxide of manganese with sulphuric acid, the result being manganous sulphate and oxygen. On the large scale, since the investigations of

* Lavoisier, "Oeuvres," ii, 430.

† Deville and Debray, 1859, "Ann. Chim. Phys." lvi, 385. "Dingler's Polyt. Journ,." clv, 130, 199, 287, 383.

Berthier, in 1822, this was replaced by the simple ignition of manganese, and finally the action of heat upon the chlorate of potash. The last-mentioned process, in spite of its costliness, has become established for laboratory operations, as being convenient and requiring only a small supply of heat, although it has frequently occasioned explosions when the gas was being too rapidly liberated. To prevent such accidents, it has been repeatedly proposed to mix manganese with the chlorate of potash. Recent accidents, especially a fearful explosion in a pharmaceutical laboratory in Paris, induced Debray and Bourgoin* to make known the precautions used in Deville's laboratory. Manganese, or the red manganoso-manganic oxide (Mn_3O_4), which is more easily obtained in a state of purity, is mixed with the chlorate of potash in equal weights, and the iron retort is heated in a furnace filled with fuel in such a manner that the fire may be kindled at the top. Schwartz† made known accidents occasioned by the use of manganese adulterated with lamp-black, or by the accidental use of the sulphide of antimony instead of manganese, and he therefore very justly recommends that oxygen gas mixture should be previously tested by heating a portion upon platinum foil. Munck‡ proposed to use oxide of iron instead of manganese, as being more easily distinguished.

Scheele's process—the mutual action of manganese and sulphuric acid—has the disadvantage that the glass is often broken by the congelation of the manganous sulphate. To prevent this, Wagner‖ proposes to use, instead of sulphuric acid, bisulphate of soda. An easily fusible double salt is thus formed which does not break the glass as it cools. Pure peroxide of manganese, when thus treated, evolves 18 per cent. of oxygen, but only 12 per cent. if ignited, when it is converted into sesquioxide. Nevertheless, the latter process is the more economical. Deville and Debray§ calculate the expense according to the source of the manganese, as follows:

Ten kilos. of Manganese from	Cost. *Francs.*	Price of 1 cubic metre of O. *Francs.*
Romanèche	10	4·86
Spain	16	3·45
Pyrenees	18	3·86
Giessen	27	4·87
Italy	40	5·98

* Debray and Bourgoin, "Ber. Chem. Ges. zu Berlin," 1870, 240.

† Schwartz, "Breslauer Gewerbeblatt," 1865, 7.

‡ Munck, "Pohl's Lehrbuch der Technologie Wein," 1865, 186.

‖ Wagner, "Jahresberichte," 1866, 198.

§ Deville and Debray, "Comptes Rendus," li, 822.

The trifling value of the residual sesquioxide which contains iron, and is therefore useless in the glass manufacture, is not taken into account. This calculation dates from the time when the re-oxidation of manganese was still an unsolved problem. If the price of oxygen obtained from manganese ranges from 3·45 to 5·98 francs it is cheaper by more than one-half than that procured from chlorate of potash, which Dupré* calculates 10 francs.

Deville and Debray† found a much cheaper source in sulphuric acid, which, at elevated temperatures, is resolved into oxygen, sulphurous acid and water. Retorts containing five litres of very infusible glass were partially filled with platinum foil, or with fragments of brick, and heated to redness, whilst sulphuric acid was allowed to flow in in a slender stream. The escaping gases are led through a cooling apparatus in order to condense sulphuric acid, and into water to remove sulphurous acid. By this process 2·436 kilos. of sulphuric acid of the sp. gr. 1·827 yielded 240 litres of oxygen at the expense of one franc per cubic metre. On its application the cost of smelting platinum was from 20 to 30 centimes per kilo.

According to a paragraph by Moigno‡ the firm of José de Susine & Co., of Paris, prepared by this process oxygen at 0·85 franc per cubic metre, reconverting the sulphurous acid into sulphuric acid.

Instead of the free acid, Deville and Debray propose the use of sulphate of zinc; 100 kilos. of the anhydrous salt yielded in their experiments 6·8 cubic metres of oxygen—far more than the best black oxide of manganese—22 kilos. sulphurous acid gas, and 51 kilos. oxide of zinc.

Wagner's statement‖ must be noted that, in the year 1867 both these methods were not carried out in Deville's laboratory, perhaps because the development of sulphurous acid complicated their execution; in fact, they have both been left in the background in industrial practice. As an attempt in that direction, we must notice the procedure of Archereau,§ who employed sulphuric acid in its cheapest combination, gypsum. He maintained that, by heating ground gypsum with sand, he could obtain silicate of lime, whilst sulphurous acid was

* Dupré, "Compt. Rend.," lv, 736.
† Deville and Debray, "Compt. Rend.," li, 822.
‡ "Les Mondes," 1867, p. 494.
‖ Wagner "Jahresberichte," 1867, 216.
§ Archereau, "Dingler's Polyt. Journ.," clxxviii, 57.

set free, which he (as also Susini) chiefly condensed by a pressure of three atmospheres, and removed the rest by passage through milk of lime. A manufactory on this principle, established at Paris, had but a short career.* The very high temperature required is evidently a hindrance. Probably the oldest source of oxygen, saltpetre, had not been used for the preparation of the gas, for two reasons. On the one hand, the product is largely mixed with nitrogen, and on the other, the temperature required for its decomposition augments the cost of preparation. Webster† overcame the latter difficulty by adding to the nitre oxide of zinc. 20 lbs. of soda-saltpetre and 4 lbs. of crude oxide of zinc yielded in his hands 94·676 cubic feet of a mixture of 59 per cent. of oxygen and 41 per cent. of nitrogen, the residue being chiefly oxide of zinc and caustic soda. In this mixture, which is useful for many purposes, the oxygen cost 2·32 francs per cubic metre if the solid residue be neglected; but, if the latter be utilized, the expense of the oxygen falls to 0·78 francs.‡

In all these methods, one of the leading ideas of modern industry, the regeneration of residues, has been neglected. The following proposals are, in this respect, happier, and have, therefore, been partially more successful. To combine the oxygen of the atmosphere chemically with some substance which shall readily give off the combined gas, and be again able to take up and give off fresh quantities of oxygen, as is done by the mercury in mercuric oxide; this is the problem which has been solved in the last few years. As early as 1829, Dingler, Junior,‖ observed that both oxide of copper and the peroxides of nickel and cobalt, with an excess of chloride of lime, gave off oxygen, converting the latter substance into chloride of calcium. In 1845, Mitscherlich§ made known the fact that various other metallic oxides, peroxide of manganese, hydrated peroxide of iron, &c., if added to a solution of chloride of lime, occasioned a plentiful liberation of oxygen. In 1865, these observations were renewed by T. H. Fleitmann,¶ with especial reference to recently prepared sesquioxide, small quantities of which sufficed to decompose completely a concentrated solution of chlo-

* Wagner, "Jahresberichte," 1867, 215.
† Pepper, "Chemical News," 1862, 218.
‡ Dupré, "Comptes Rendus," lv, 736.
‖ "Dingler's Polyt. Journ.," xxvi, 231.
§ Mitscherlich, "Pogg. Ann.," lviii, 471.
¶ "Ann. Chem. Pharm.," cxxxiv, 64.

ride of lime into chloride of calcium and oxygen gas. He recommended, in practice, a solution of chloride of lime concentrated as much as possible, and clarified by filtation or deposition to prevent frothing, and then mixed with 0·1 to 0·5 per cent. of its contents of sesquioxide of cobalt, and heated from 70° to 80°. On employing chloride of lime at 35 per cent., he obtained oxygen in a regular stream, to 25 or 30 times the volume of the liquid. Other observers, especially F. Varrentrapp,* confirmed these results, and recommended the industrial adoption of the process. The sesquioxide of cobalt does not require to be manufactured in advance. Any salt of cobalt in solution serves the same purpose, and the sesquioxide settles to the bottom and can be used again in fresh operations.

For the same reason, a cheaper oxide, as, for instance, oxide of copper, which Böttger proposes,† offers but little advantage, especially as a higher temperature is required for its decomposition.‡ The trouble of preparing a clear solution of chloride of lime may be dispensed with if, as Stolba suggests, a piece of paraffin of the size of a pea be added to the turbid solution.‖ The thin layer of oil upon the surface prevents frothing. One difficulty yet remains to be removed. Chloride of lime requires considerable quantities of water for solution, and large vessels are, therefore, required for preparing moderate quantities of oxygen. A. Winkler,§ therefore, dispensed with chloride of lime, by using a thick milk of lime with a little salt of cobalt, and treating the mixture with chlorine. By means of this modification, a larger volume of oxygen is evolved with the same vessels, and all danger of frothing over is avoided.

The part played by the metallic oxide in these methods is readily intelligible. It serves as a carrier of oxygen, passing alternately to a higher, readily decomposable, stage of oxidation, and then returning to its original state. The hypochlorous acid of the chloride of lime converts the sesquioxide of cobalt into an unstable cobaltic acid, which is immediately resolved into sesquioxide of cobalt and oxygen—

$$Co_2O_3+3[CaCl(OCl)]=3CaCl_2+2CoO_3=Co_2O_3+O_3.$$

* "Mittheilungen d. Gewerbe Vereins des Herzogthums Braunschweig," 1865-66, 72.

† Böttger, "Journ. Prakt. Chem.," xcv, 375.

‡ Reinsch, "Neues Jahr. Pharm.," xxiv, 94.

‖ Stolba, "Journ. Prakt. Chem.," xcvii, 309.

§ A. Winkler, "Journ. Prakt. Chem.," xcviii, 340.

Thus, one part of the above-stated problem is solved, and the developer of oxygen is re-formed by the very act of developing oxygen. Still the oxygen is obtained, not from the atmosphere, but from the chloride of lime. The solution of chloride of calcium formed must be removed, and replaced by milk of lime. The process, therefore, is not continuous, and in this respect there is still room for economic simplification.

This, also, has been achieved, and by means of experiments which lead us back from the moist to the dry way. Since 1851,* Boussingault has brought baryta into use as a bearer of oxygen, heating it to redness in porcelain tubes, and treating it with moist air free from carbonic acid, by which it is converted into peroxide of barium. By means of a current of watery vapor, it is re-converted into hydrate of baryta, and oxygen is liberated. An addition of lime or magnesia prevents any incipient fusion, and 75 grms. of baryta yield on each operation 4 to 5 litres of oxygen. Gondolo† improved this method in 1868, replacing the porcelain tubes with iron ones, protected by magnesia within and by asbestos without, and laid in suitable furnaces, whose temperature was regulated by dampers, and adding to the baryta a little manganate of potash as well as lime and magnesia. In this manner as many as 122 alternate oxidations and deoxidations were conducted in the same tube. Whether, however, it be due to the high temperature, or to other drawbacks which stand in the way of the industrial applications of this method, it has not yet found its way into actual practice.‡

Attention was directed to more sensitive transferrers of oxygen than baryta, and in the first place to chloride of copper. Its property, on exposure to the air to pass into oxychlorides of various composition, lies at the root of the manufacture of a well-known pigment, Brunswick green. In 1855, Vogel proposed the action of hydrochloric acid upon oxychlorides of copper as a source of chlorine.‖ Mallet§ examined these bodies more closely, and in 1867 and 1868 proposed a method for the industrial preparation of chlorine and oxygen. He found that cuprous chloride is converted into oxychloride by a current of steam at from 100° to 200° C., which, in contact with hydrochloric acid, is im-

* Boussingault, "Comptes Rendus," xxxiii, 261 and 821.
† Gondolo, "Comptes Rendus," lxvi, 488.
‡ Robbin, "Pogg. Ann.," cxxii, 256.
‖ Vogel, Wagner, "Jahresberichte," 1861, 177.
§ Mallet, "Comptes Rendus," lxiv, 286, and lxvi, 349.

mediately resolved into cupric chloride and free chlorine, but which, if heated to 400°, gives off all its oxygen. One kilo. of cuprous chloride yields 28 to 30 litres of oxygen. In experiments on the large scale, 100 kilos. of cuprous chloride yielded either 3 to 3½ cubic metres of chlorine. As four or five such operations can be conducted daily, 200 to 300 kilos. of cuprous chloride could be made to yield daily 15 to 18 cubic metres of oxygen. The requisite apparatus consists of rotatory cast-iron retorts lined with clay, which contain the cuprous chloride mixed with one-third sand or kaolin to diminish its fusibility. This process was carried out in Cologne in 1871.* A company established at Paris for the utilization of the process flourished for a short time only,† probably because it was superseded by an analogous process.

We refer to the method which has been developed since 1867‡ by the suggestive inventor, Tessié du Motay. Its transferrer of oxygen is the black oxide of manganese, and it is based upon the following reactions: Hydrate of soda, according to Mitscherlich, if heated to dull redness in contact with air and black oxide of manganese, yields manganate of soda and water—

$$4NaOH+2MnO_2+2O=2Na_2MnO_4+2H_2O.$$

Manganate of soda at the same temperature in a current of dry superheated steam is resolved again into hydrate of soda, sesquioxide of manganese, and free oxygen—

$$2NaMnO_4+2H_2O=4NaOH+Mn_2O_3+3O.$$

The only condition, then, is to free the superheated air previously from carbonic acid, in order to obtain a mixture which shall he perpetually efficient. This method has been found satisfactory on repeated scrutiny, and has been applied on the large scale at Comines (near Lille), at Pantin (near Paris), New York, Brussels, and Vienna. Bothe‖ reports that a melting of 60 parts of dry carbonate of soda with 40 parts of peroxide of manganese at 95 per cent. yielded, according to analysis 74·62 of manganate of soda, and that 40 kilos. of this substance, which, according to theory, should yield 2036 cubic decimetres of oxygen, actually produced 1800, or 90 per cent. of the calcu-

* Phillips, "Der Sauerstoff" (Berlin, 1871), 22.
† Wagner, "Jahresberichte," 1867, 215.
‡ Tessié du Motay, "Institut," 1868, 48.
‖ Bothe, "Zeitschr. d. Vereins Deutsch. Ing.," 1867, 334.

lated yield. He recommended the process as easy of execution. The most complete description has been given by Pourcel.* According to him, Tessié du Motay employs for retorts cast-iron ellipsoids, which lie horizontally side by side and are divided by a grate into two equal portions parallel with their axis. Upon the grate are spread in each retort 350 kilos. of manganate of soda, or the corresponding reduced mixture of soda and manganese, in such a manner that its thickness amounts to 0·6 of a metre, and the empty space above and below the mass is as small as possible. In Comines, where five such retorts are in action, the daily production amounted to 140 cubic metres of oxygen, with an expenditure of 450 kilos. of coal for heating the retorts and 150 kilos. for the steam-engine.—*Chem. News*, May and June.

(To be continued.)

ACTION OF STRONG SULPHURIC ACID, SP. GR 1·843, UPON CERTAIN SALTS.

BY THOMAS GARSIDE, F. C. S.

When 14 parts of *baric sulphate* were added to 100 parts of sulphuric acid, and the mixture rubbed against the sides of the test-tube with a glass rod, a nearly clear solution was effected after some time. When the temperature of this was raised to 100° C., needle-shaped crystals were produced in large quantity; at 160° to 180° these entirely disappeared, but others of prismatic shape began to form, and increased in quantity as the temperatue approached the boiling-point of the acid. At a boiling heat 100 parts of the acid retained between 8·5 and 9 parts of the salt in solution. When the mixture was cold, the whole of the salt re-dissolved upon stirring, and a perfectly clear solution was obtained.

The needle-shaped crystals which formed at 100° did not re-dissolve in the cold acid.

Strontic sulphate was soluble to the extent of 14 parts in 100 parts of acid at 70° C. If the temperature was lowered from this point, tabular rhombic crystals were produced; if it were raised, others having the form apparently of cube and octahedron were deposited.

Anhydrous *calcic sulphate* added to sulphuric acid in the proportion of 8·25 parts to 100, was converted at 15° C. into needle-shaped crystals. These disappeared and complete solution was effected at about 70° C.

* Pourcel, "Mémoires de la Société des Ingénieurs Civilis," P 1873.

On continuing to raise the temperature, at a little over 100° C., crystals of various shapes were deposited; these again disappeared at 160° C. to 180° C., but were again thrown down at 200° C. and upwards.

Lead sulphate was soluble to the extent of 1·5 parts in 100 of boiling acid. When cold a few crystals were deposited, and 1·15 parts retained in solution.—*Chem. News* [*Lond.*], June 4, 1875.

VARIETIES.

LIQUOR-SELLING BY APOTHECARIES.—The "Boston Medical and Surgical Journal" for July 15th, reminds the physicians of Massachusetts that, according to the new license law now so energetically carried out in that State, apothecaries are not allowed to sell liquors, except alcohol, for any purpose, without an order from a physician, "between the hours of twelve at night and six in the morning, or on any part of the Lord's day." If this is remembered a great deal of trouble will be saved. Every apothecary, who has a license, is under bonds of one thousand dollars to obey the law.

ANÆSTHETIC ACTION OF BROMOFORM.—Dr. Rabuteau reported to the Biological Society of Paris some cases, showing that the application of bromoform to the skin produced anæsthesia without the revulsive and painful effects of the application of chloroform.—*Amer. Journ. Med. Sciences*, July, from *Gaz. Hebd. de Méd. et de Chir*, May 7th.

POISONING BY RHUS TOXICODENDRON.—Dr. S. W. Morrison uses a solution of carbolic acid, ʒss. and sulphite of sodium ʒiii in six ounces of water, to be applied to the parts affected on bandages of muslin; the inflammation is thereby checked and relief afforded immediately.—*Philada. Med. Times*, July 3d.

NEW SOURCES OF INDIA RUBBER.—It is well known that rubber abounds in the milky juices of many plants besides the caoutchouc-tree; for example, lettuce and dandelion. A company has been formed in London, Ontario Province, for the extraction of caoutchouc from milk-weed (*Euphorbia corollata*), the juice of which contains some 4 per cent. of rubber. The plant is partially decomposed, steamed, then treated with coal-tar naphtha, which, being distilled, leaves the residuary caoutchouc in the solid form.—*Journ. of Ap. Sci.*, July 1st.

THE BRIAR ROOT OF COMMERCE.—Sixty tons of laurel roots (*Kalmia latifolia*, Lin.) from the Rappahannock were transferred to a steamer at Baltimore, not long since, and consigned to Philadelphia, there to be manufactured into pipes. Many of the handsome articles exposed in the tobacconists' show-cases and windows, and sold for briar-root pipes, are made out of this identical material, which is purchased and dug up at very little expense, in all the lower counties of Maryland.—*Journ. of Ap. Sci.*, July 1st.

IMPURE SODIUM PHOSPHATE.—A. B. Lyons, M. D., writes: "I have recently met with a specimen of phosphate of sodium bearing the label of a reputable American manufacturing house, containing a large percentage of sulphate of sodium. The salt had a suspicious appearance at first sight, being imperfectly granulated, as if obtained by simply evaporating the mother liquor to dryness. It dissolved completely in twelve times its weight of cold water, whereas pure crystallized sodium phosphate requires at least sixteen times its weight. Exposed to a moderate heat till it ceased to lose weight it gave up barely 25 per cent. of its weight of water of crystallization, whereas sodium phosphate contains 60 per cent. On ignition there was a further loss of weight amounting to about 2 per cent.; anhydrous sodium (hydro-disodic) phosphate would lose more than twice that quantity of basic water.

A solution of the salt in water yielded, after the addition of hydrochloric acid, an abundant precipitate with barium chloride. By a rough volumetric estimation, the amount of sulphuric acid (H_2SO_4) was found to be about 27 per cent. of the entire weight of the salt. The salt, therefore, deprived of what remains of its water of crystallization, contains more than half its weight of sodium sulphate.—*Detroit Rev. of Med. and Pharm.*, July.

DETERMINATION OF ALBUMEN BY TANNIN.—The determination of albumen by a standard solution of tannin does not give correct results, since all kinds of albumen do not combine with the same proportion of the reagent. Thus, that found in Bright's disease retains 37 per cent. of tannin, but that met with in accidental cases of albuminuria, only 28. To determine albumen by means of tannin, it is necessary to add to the albuminous liquid, half its volume of a solution containing 26 per cent. of common salt. Solution of tannin is added till all the albumen is thrown down. The whole is filtered, washed with water till free from salt, the tannin removed by means of boiling alcohol, and the residue dried and weighed. —*Chem. News*, March 25, from *Bull. Soc. Chim.*, Paris.

RAPID PROCESS FOR THE DETECTION OF LEAD IN THE TIN LINING OF VESSELS. M. Fordos.—Place, with a tube plunged in pure nitric acid, a slight layer of acid upon any part of the tinning, selecting by preference the thickest parts. Both metals are attacked, forming stannic oxide and nitrate of lead. After a few minutes, heat slightly to expel the last traces of acid, and allow to cool; then touch the pulverulent spot produced by the acid with a tube dipped in a solution of 5 parts of iodide of potassium in 100 of water. The iodide has no action upon the oxide of tin, but with the nitrate of lead it reacts, forming yellow iodide of lead, and showing the presence of even a small quantity of this metal. The surface of the tinning must be carefully cleansed before applying the nitric acid, and the acid should not penetrate to the iron or copper which forms the body of the vessel, as the reaction might thus be complicated.—*Chem. News* [*Lond.*], April 30, 1875, from *Compt. Rend.*

DECOLORIZING PROPERTY OF OZONE. M. A. Boillot.—One of the most striking properties of ozone is its bleaching power. The effects ascribed to chlorine are really due to ozone. Ozone employed directly acts as an oxidizing agent, laying hold of the hydrogen of the substance with which it is in contact, whence results

bleaching, if the body is colored. On allowing chlorine to act upon any animal or vegetable matter, it decomposes a certain quantity of water and seizes its hydrogen, forming hydrochloric acid. The oxygen set free by this reaction is transformed into ozone, which in its turn lays hold of hydrogen present in organic matter.—*Chem. News*, June 4, from *Compt. Rend.*

Researches on the Combination of Grape-Sugar with Copper and on Frommherz's Assay.—E. Salkowski states that, if in testing diabetic urine the sulphate of copper is added without precaution, the precipitate formed does not re-dissolve, and the filtrate is colorless, feebly alkaline, containing neither copper nor sugar, or at most a trace of sugar. The bulk of the sugar is in the precipitate, and is held with such force that it cannot be withdrawn by prolonged washings. If we mix 1 atom of sugar, 5 atoms of sulphate of copper and 10 atoms of hydrate of soda, the filtrate contains no sugar, and the precipitate dissolves readily in the soda-lye; and, if the liquid is heated, all the copper is thrown down as sub-oxide, whilst the sugar is destroyed. If these proportions are exceeded, hydrated oxide of copper is mixed with the precipitate.—*Chem. News*, June 11, from *Monit. Scient.*

Anilin Black Marking Ink. Dr. Jacobsen.—To prepare this ink the two following solutions are required: (1.) Dissolve in 60 grms. of water 8·52 grms. crystalline chloride of copper, 10·65 grms. chlorate of sodium, and 5·35 grms. chloride of ammonium. (2.) Dissolve 20 grms. hydrochlorate of anilin in 30 grms. of distilled water, and add 10 grms. solution of gum arabic (1 part of gum to 2 of water), and 10 grms. glycerin. If 4 parts of the anilin liquid are mixed in the cold with one part of the copper solution, we obtain a greenish liquid, which may be used at once for marking linen; but as it decomposes in a few days, it is better to preserve the two solutions separately. The writing is at first greenish, but is blackened by exposure to steam (*e. g.*, by being held over the spout of a boiling kettle). A dry heat renders the tissue brittle.—*Ibid.*

Uninflammable Products.—It is well known that certain substances, notably phosphate of ammonium, incorporated in the fibres of tissues render the same incombustible, or, rather, admit of their burning very slowly and carbonizing without the production of flame. M. L'Abbé Mauran, says "La Nature," has recently discovered that a mixture of borax, sulphate of sodium and boracic acid, in suitable proportions, while rendering cloth uninflammable, will also prevent any alteration of color, flexibility, or lasting qualities through the effect of combustion.—*Scientific American*, July 17th.

Water and its Inhabitants.—The quality of water in relation to its fauna and flora has been the subject of investigation by some of the French Academicians. In substance, the results seem to prove that water in which animals and plants of higher organization will thrive is fit to drink; and on the other hand, water in which only the infusoria and lower cryptogams will grow is unhealthy. If the water become stagnant and impure, aquatic plants of the higher order will languish and disappear, and the half-suffocated fish will rise near the surface and crowd

together in parts where there may still be a little of the purer element trickling in, and if driven from these places they soon die. *Physa fontinalis* will only live in very pure water; *Valvata piscinalis* in clear water; *Limnæa ovata* and *stagnalis* and *Planorbis marginatus* in ordinary water; and finally, *Cyclas cornea* and *Bithynia impura* in water of middling quality; but no mollusk will live in corrupt water. Plants also exercise a reactive influence on the quality of water. The most delicate appears to be the common water cress, the presence of which indicates excellent quality. Veronicas and the floating water weeds flourish only in water of good quality. The water plantain, mints, loosestrife, sedges, rushes, water lilies, and many others, grow perfectly well in water of moderately good quality. Some of the sedges and arrowheads will thrive in water of very poor quality. The most hardy or least exacting in this respect is the common reed, or *Phragmites communis.—Scientific American*, July 17th.

MINUTES OF THE COLLEGE.

A stated meeting of the Philadelphia College of Pharmacy was held, on the afternoon of June 28th, in the College Hall, Dillwyn Parrish, President, in the chair. Twenty members were in attendance.

The minutes of the annual meeting, in March last, were read and adopted.

The minutes of the Board of Trustees for the last three months were also read by William C. Bakes, Secretary of the Board, and, on motion, adopted.

Mr. Bakes, on behalf of the Committee to bring forward a Programme for the Centennial, read the following report, which was unanimously adopted:

To the Philadelphia College of Pharmacy:

A Committee, appointed at the last Annual Meeting of the College, to suggest a programme for the reception and entertainment of such pharmacists, druggists, manufacturing chemists and others connected with pharmaceutical pursuits, who may visit our city during the Centennial Exposition, from May 10th to November 10th, 1876, respectfully submit the following, which, after mature deliberation, they believe will be in keeping with the dignity of the College, and eminently useful and gratifying to our visitors:

They recommend the employment of an Actuary during five months of the Exposition, who should be at the College daily to give such advice and assistance to our guests as they may desire. He shall be a Pharmacist, and capable of conversing, at least, in the English, French and German languages. There shall be kept at the College a Register, in which shall be entered the name of each visitor; wherefrom; the branch of business he is engaged in; his residence in this city; the date of his arrival and departure, and where letters may be forwarded.

There shall also be kept a list of good boarding-houses for those intending to prolong their visit, without incurring the expense of the larger hotels. The list shall give, beside the location, the capacity of the house, the kind of accommodation, and the terms.

The wires of the American District Telegraph Company should be introduced into the College, so that messengers may be summoned immediately to carry messages and perform other service; and when a stranger arrives and wishes a boarding-house, instead of merely directing him, let a messenger boy accompany him to the house, with a card of introduction from the Committee of the College.

Arrangements might be made with one or more livery-stables, by which we can secure for visitors a uniform and moderate charge for carriages by the hour.

One of our rooms should be arranged for reading and correspondence, and one of the U. S. letter-boxes should be placed in the building. Copies of the leading newspapers published in the principal cities of Europe, also, those of the large cities of this country and our own city papers should be subscribed for, and placed on file for the use of visitors. A generous supply of stationery requisites should also be provided. Postal and railway time-tables and the various routes of travel, should be kept at the College.

A guide-book of the city, printed in English, French and German should be presented to each visitor, together with cards of invitation and admission to our various public and private institutions.

Notices should be sent to all the Pharmaceutical Societies in Europe and in this country, and published in their journals, inviting those intending to visit our city in 1876 to make our College their head-quarters, and that all letters may be addressed to the care of the College.

The largest number of visitors will doubtless be present during the Meeting of the American Pharmaceutical Association, and at that time it may be necessary to extend our arrangements to include some social gathering, to afford an opportunity for our guests to meet and become mutually acquainted.

The report was referred back to the Committee, with authority to carry out its recommendations, and to perfect such a programme as they in their wisdom shall devise for the entertainment, scientifically and socially, of such visitors as shall honor us with their presence.

The various recommendations of the Committee found favor with all the members who discussed the matter, and the Committee are left free to make such arrangements as will insure the comfort of all who shall visit the College during the Centennial year.

In connection with this subject, Professor Maisch called the attention of the College to sending out invitations to the foreign pharmaceutical associations, as soon as possible, in order that they may embody them in their transactions, and thus give all their members notice.

He offered the following preamble and resolution, which, on motion of Mr. Shinn, were unanimously adopted:

WHEREAS, the American Pharmaceutical Association has invited the fifth International Pharmaceutical Congress to meet in this city during the International Exposition in the year 1876, and in case that should be deemed not advisable, has extended an invitation to the pharmacists of all nations to attend the meeting of that Association which is to be held here next year; and

WHEREAS, the International Exposition will probably be visited by many druggists, pharmacists and chemists from abroad; and

WHEREAS, any arrangements for their reception, which may be adopted at the next meeting in Boston of the American Pharmaceutical Association cannot be brought to the notice of many Pharmaceutical Societies of foreign countries in time for their annual meetings, which take place prior to October next, therefore be it

Resolved, That the Corresponding Secretary be instructed to communicate, without delay, with the presidents or secretaries of the national or principal local pharmaceutical associations of all civilized countries whose addresses can be ascertained, requesting them to extend to the members of their own and of kindred societies in their countries the hearty invitation of the Philadelphia College of Pharmacy, to make the Hall of this College their head-quarters during the International Exposition of 1876, assuring them that the members of this College will use their best endeavors to make the visit of our professional brethren to this country as agreeable, and to facilitate the objects of their visit as much as possible.

Mr. Shinn further moved that this subject be referred to the Centennial Committee, in connection with the Corresponding Secretary, who is hereby authorized to carry out the views of the College, as directed by the Committee. The motion was unanimously adopted.

A communication was received from Wm. McIntyre, Registrar, calling the attention of the College to a paper by James Kemble, Ph. G., entitled "Unusual Doses, and their Correctness when ordered in Prescriptions," said paper of Mr. Kemble having been read before the eighth regular pharmaceutical meeting, and after discussion by that body was referred to the College.

At the request of the meeting, the paper was read, and a short discussion ensued, when, on motion of Prof. Remington, amended by Prof. Maisch, the subject was referred to the delegates to the American Pharmaceutical Association, with instruc-

tions to bring the matter before that body, with a view of securing uniformity of action in the United States, and to convey the information that this College recommends a suitable mark to designate unusual doses. The motion was adopted.

This being the time at which delegates are chosen to represent this College at the meetings of the American Pharmaceutical Association, and in the Conference of the Pharmaceutical Colleges of the United States, an election was ordered, which resulted in the selection of Messrs. James T. Shinn, Dr. Wilson H. Pile, Thomas S. Wiegand, William McIntyre, Dr. Adolph W. Miller, as delegates to the American Pharmaceutical Association, and Messrs. John M. Maisch, Joseph P. Remington, Charles Bullock, Delegates to the Conference of Pharmaceutical Colleges.

Then, on motion, adjourned.

WILLIAM J. JENKS, *Secretary.*

PHARMACEUTICAL COLLEGES AND ASSOCIATIONS.

PHILADELPHIA COLLEGE OF PHARMACY.—The Committee appointed at the quarterly meeting in June (see page 374) has drafted the following circular letter, which has been approved by the officers, and was sent to the foreign pharmaceutical societies in compliance with the resolution adopted by the College:

PHILADELPHIA COLLEGE OF PHARMACY,
145 NORTH TENTH STREET, PHILADELPHIA, U. S. A.

July.....1875.

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The International Exposition which will be held in this city in 1876, will, without doubt, attract many Pharmacists, Chemists and Druggists from different parts of the world. Most of these visitors will probably endeavor to be present at the 23d Annual Meeting of the American Pharmaceutical Association, which will convene in this city in August or September, 1876.

The members of the Philadelphia College of Pharmacy earnestly desire to make the visit of their professional brethren on these occasions agreeable, and to facilitate the objects of their visit to this country as much as possible. With this intent, at the Quarterly Meeting of the College, held June 28th, it was resolved, that a cordial invitation be extended to the members of your honorable society, and of all kindred societies in your country, to make the College Building their head-quarters during the International Exposition.

It is intended to set apart a room to be used or reading and correspondence, and to have an Actuary daily in attendance, for the purpose of giving all needful and desirable information to strangers. It will be our aim to give information to our visitors regarding hotels and boarding-houses in this city, to procure for them tickets of admission to the various places of interest, to place them in telegraphic communication with all parts of the city and country, to receive and take charge of letters, to give information regarding travel to points of interest, &c., finally, to make our visitors, while among us, feel at home.

In extending to your society this invitation, we would respectfully ask that the same be communicated to the kindred societies of your country.

Hoping many will give us the pleasure of welcoming them to our city, we have the honor to remain,

With Fraternal Greetings,

(Signed) CHAS. BULLOCK, *Vice-President.*
ALFRED B. TAYLOR, *Corresponding Secretary.*

P. N.—It is desirable that the members of Pharmaceutical and kindred societies of foreign countries be provided with a note, certifying their membership.

NEW HAMPSHIRE PHARMACEUTICAL ASSOCIATION.—A law has been recently passed in New Hampshire, entitled "An Act to Prevent Incompetent Persons from Conducting the Business of Druggists and Apothecaries in this State." Under the provisions of this law, the above Association has nominated six pharmacists, from which number the Governor appointed three, as the "Commission of Pharmacy and Practical Chemistry." Annually, hereafter, three nominations are made by the Association, the Governor appointing one from this number to take the place of one retiring Commissioner; the appointments being then made for three years.

The first board is constituted as follows: Elias S. Russell, of Nashua, for one year; Charles S. Eastman, of Concord, for two years, and Hon. Charles A. Tufts, of Dover, for three years. The law allows all druggists who have been established six months or more to continue their business as heretofore, but all new persons entering the trade have to pass an examination before the Commissioners and get a certificate of qulification.

THE RHODE ISLAND PHARMACEUTICAL ASSOCIATION, which, we believe, has been recently organized, held its quarterly meeting in the city of Newport, July 12th, and elected the following delegates to the Meeting of the American Pharmaceutical Association: Messrs. Calder, Blanding, Mason, Phillips and Greene; Messrs. S. M. Colcord and G. F. H. Markoe, of Boston, and B. P. Clapp, of Pawtucket, were elected honorary members. A dinner was given at the Aquidneck House by the resident members, after which short speeches were made by the President, A L. Calder, Prof. Markoe, S. M. Colcord and Wm. H. Colton, of Newport. "The Professional Education of the Pharmacist," "The Boston Meeting of the National Association," "The Evils of Patent Medicines," &c., formed the themes of the addresses.

THE NEW YORK COLLEGE OF PHARMACY has recently elected Professors C. R. Fresenius, of Wiesbaden; G. Dragendorff, of Dorpat; Fr. Mohr, of Bonn, and W. De F. Day, of New York, honorary members. The following delegates to the Sixth Conference of Schools of Pharmacy were appointed: Chas. Rice, Ewen McIntyre and Prof. P. W. Bedford.

At the meeting of the Board of Trustees held July 1st, various donations were received, among which were a cabinet of minerals, presented by Miss A. Shedden, and a collection of Southern plants presented by Mr. H. A. Cassebeer.

NEW YORK ALUMNI ASSOCIATION OF THE PHILADELPHIA COLLEGE OF PHARMACY.—This is a new society, which was organized June 29th at the lecture-room of the New York College of Pharmacy, and is composed of graduates of the Philadelphia College residing in New York and vicinity. "Its objects are the cultivation of social relations between the graduates, an interchange of pharmaceutical knowledge, discussions of allied scientific subjects and the advancement of our profession." (Art. I, Sect. 2, of the Constitution.) Thirty-seven graduates have enrolled as members, many of them being established in business. A very commendable provision of the Constitution is the one requiring the Corresponding Secretary to "keep a register, in which graduates in pharmacy, who come to New York in quest

of employment, may enter their names, on presentation of unquestionable reference of character and ability."

The following officers have been elected: P. W. Levering, President; W. B. Means and T. C. Morgan, Vice-Presidents; H. S. Wellcome, Secretary; Wm. Wilson, Corresponding Secretary; A. J. Ditman, Treasurer, and F. C. V. Weber, M. D.; Thos. D. McElhenie, J. R. Mercein, W. R. Laird, J. Jungmann and W Lehman, Executive Board. The following Committee on essays and papers was appointed: J. W. Wood, F. C. V. Weber and Wm. Wilson. Delegates to the next meeting of the American Pharmaceutical Association: A. J. Ditman, H. S. Wellcome, B. T. Fairchild and J. R. Mercein.

The regular meetings of the Association will be held on the first Tuesday in each month, the annual meeting being in April. The entrance fee and the annual dues are $1 each.

We wish this Association good success, and, from our personal knowledge of the members, feel convinced that they will enter with enthusiasm upon the work before them. Graduates of the Philadelphia College of Pharmacy, residing in New York and vicinity, who have not already identified themselves with this body, should send their addresses to the Secretary, corner of Fifth avenue and Twenty-fourth street.

MARYLAND COLLEGE OF PHARMACY.—The following officers were elected at the stated meeting, held July 8th: President, Joseph Roberts; Vice-Presidents, Wm. Silver Thompson and J. Newport Potts; Treasurer, J. Brown Baxley; Secretary, Edwin Earickson; Examiner, Louis Dohme.

The Delegates to the next Meeting of the American Pharmaceutical Association are: Messrs N. Hynson Jennings, Wm. Silver Thompson, Joseph Roberts, E. Walton Russell and Louis Dohme; Alternates, Messrs. Henry A. Elliott, J. Newport Potts, J. Faris Moore, Charles F. Adams and Edwin Earickson; Delegates to the Conference of Schools of Pharmacy: Messrs. J. Faris Moore, J. Brown Baxley and Louis Dohme.

THE RICHMOND PHARMACEUTICAL ASSOCIATION has appointed the following Delegates to the next Meeting of the American Pharmaceutical Association: T. Roberts Baker, William H. Scott, Ira W. Blunt, Powhatan E. Dupuy and John B. Purcell.

LOUISVILLE COLLEGE OF PHARMACY.—We are pleased to learn that a movement has been set on foot, which, we hope, will be successful, whereby this institution is to obtain a permanent habitation. It appears that the building of the Male High School in that city, which is erected upon what is known as the "University grounds," has become entirely inadequate. It is now proposed that the city be given one-fourth of the square which includes the high-school building in fee simple, provided that the city relinquish her reversionary interest in the property, and that the present high-school building be given to the College of Pharmacy, while a suitable edifice for school purposes might be erected on the remaining fourth. This movement, we observe, is being endorsed by the newspapers, which recognize the necessity of the proper education of pharmacists.

EDITORIAL DEPARTMENT.

THE DESTRUCTIVE INUNDATIONS IN FRANCE.—A few weeks ago the Atlantic cable announced the occurrence of terrible floods in several Departments of France, and since that time the daily papers have published detailed accounts of the unprecedented loss of life and the destruction of property amounting to many millions of dollars. Dr. J. Léon Soubeiran, Professor at the School of Pharmacy, at Montpellier, writes to us:

"The losses are immense, and among the victims are fouud a number of our confreres, in whose behalf I would appeal to the generosity of the pharmacists of the United States, and I feel sure that they will give renewed proof of the confraternity which should exist between the pharmacists of the old and new world."

In many cities of the United States and Canada, committees have been organized for the purpose of collecting funds in aid of the sufferers. The appeal of Professor Soubeiran is made specially in favor of the suffering pharmacists, and we lay it before our readers in the hope that it will be heartily responded to. A small contribution from each one of our readers would make a sum which, though insufficient to cover the losses, would go far towards lightening the burden of our professional brethren in the inundated districts.

The editor will, with pleasure, receive donations for this purpose, duly acknowledge their receipt, and account for them hereafter.

THE 23D ANNUAL MEETING OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.—The circular notice of the Permanent Secretary has been issued, and gives information of the following traveling arrangements:

1. A party will leave Baltimore on Thursday, September 2d, in the steamship "William Crane," which sails on that day at 3 o'clock P. M. The steamer stops at Norfolk, Va., on the route, arriving there early on Friday morning, and remaining until the evening of the same day, giving passengers ample time to see the city and the Navy Yard at Portsmouth without additional expense. The party will arrive at Boston on the following Sunday afternoon.

2. A party will sail from Philadelphia, from the foot of Pine street, by steamer, on Saturday, September 4th, at 10 o'clock A. M., arriving at Boston the Monday forenoon following.

It is expected that many members may find it convenient and agreeable to participate in one of these trips by sea, and since both lines enjoy great popularity with summer tourists, it is necessary that berths be paid for several weeks in advance of the days of sailing. The following rates include all expenses, there being no extra charges: Fare from Baltimore to Boston, $12.50; for the round trip from and to Baltimore, $20; between Philadelphia and Boston, $10 each way. Berths may be secured from Baltimore through Wm. S. Thompson, No. 5 West Baltimore street, or N. Hynson Jennings, 90 North Charles street, and from Philadelphia through John M. Maisch, 145 North 10th street.

3. The Local Secretary has secured a reduction of the fare by the Fall River

Line, from $10 to $7 for the round trip between New York and Boston. Members going by this line will have a delightful sail through Long Island Sound. Tickets may be obtained from L. M. Royce, at the office of McKesson & Robbins, 91 Fulton street, New York.

After the final adjournment, an excursion to the White Mountains is in contemplation, for which a reduction from the regular charges has been secured. The particulars will be announced at the meeting. Those members who, last year, joined in the excursion to the Mammoth Cave, remember with pleasure the time so pleasantly and profitably spent on that trip, and will look forward to similar enjoyments while visiting the picturesque mountains of New England.

The head-quarters of the Association will be at the St. James Hotel, where ample accommodations for the visiting members and their families have been provided. The meeting and the exhibition of objects of pharmaceutical interest will be held at the Odd Fellows' Building, where goods intended for the exhibition should be received early in September, to enable the Local Secretary to make all necessary arrangements prior to the opening of the meeting.

COLLECTION TO ILLUSTRATE THE ETHNOLOGY OF THE UNITED STATES.—We have received a circular from Professor Joseph Henry, Secretary of the Smithsonian Institution, in relation to this collection, which will form part of the governmental display to be made at the International Exhibition in 1876, in accordance with the act of Congress of March 3d, and the executive order of March 5th, 1875. The object of the collection is to exhibit as complete a series as possible of everything tending to illustrate the past and present history of the aboriginal races now or previously inhabiting the continent of North America, and it is intended to include everything that tends to throw light upon the manners and customs of the American tribes, such as implements of war, the chase, agriculture, etc., articles of dress, ornament and the toilet, wigwams, sleds, boats, etc. It is desired that specimens of this kind be furnished to the Smithsonian Institution, and information is invited in regard to such collections in possession of private individuals or public institutions, to include, if possible, photographs and outline drawings of the articles considered most interesting and remarkable. Detailed instructions for collecting ethonological specimens, also a pamphlet containing a description of the principal objects that go to form part of this collection, will be sent upon application to the Smithsonian Institution, which, together with the Indian Bureau, is engaged in making collections for a common object. It is scarcely necessary to add that every specimen, whether entire or fragmentary, will be duly credited to the contributor.

THE STAMP TAX ON MEDICINES.—Our readers have been informed in due season of the passage of the "Little Tariff Bill," on February 8th last, and of the modifications of the former rulings of the Internal Revenue Office made necessary by Section 22 of the law mentioned. The provisions of this section appear to be so clear and precise, that we are surprised that any pharmacist should misconstrue them. We are induced to refer to this subject again, in consequence of a decision recently made by the new Commissioner, which covers the case cited on page 137 of our March number.

It appears that a quantity of solution of citrate of magnesium was recently seized in Iowa for violation of the Internal Revenue Laws. The matter being referred to the Department at Washington, the decision of the Commissioner was as follows:

"I have to say that the medicine is officinal, as you state, but it is put up in a style or manner similar to that of patent or proprietary medicines in general, having directions for its use printed on the label, and without the formula by which it is made being either printed or referred to on the label, and consequently, in the opinion of this office, is liable to stamp tax."

SALICYLIC ACID.—Dr. Geo. H. Boyland, of Baltimore, has a paper in the March number of the "Virginia Medical Monthly," entitled "Practical Notes on Salicylic Acid," in which the following sentences occur: "The first specimens of salicylic acid ever brought to this country were brought here by myself (a present from the hands of the learned Kolbe). The first article on salicylic acid ever printed in this country was written by myself, and appeared in the 'Baltimore Gazette,' July 10th, 1874. I refer to its use as a disinfectant." The last two sentences, if taken together as one whole, are correct, we believe. In regard to the first, however, we must say, that salicylic acid was made by Professor Wm. Procter, Jr., as early as 1842, and briefly described by him in "American Journal of Pharmacy," for October, 1842, p. 212, and, afterwards, has been frequently prepared by him from oil of gaultheria as a lecture experiment. The above quotation is doubtless intended to refer to salicylic acid as prepared by Kolbe's new process, to which we have repeatedly alluded Dr. Boyland, we understand, resided in Leipzig when the new process was discovered, and the antiseptic and anti-fermentative properties of salicylic acid were being investigated, some experiments relating to the latter being made by him.

DAMIANA is the name of a new drug, for which wonderful medicinal properties are claimed. It is said to be a powerful aphrodisiac, to improve the sexual ability of the enfeebled and aged, and apparently to have a specific effect upon all the organs of the pelvis, giving increased tone and activity to all of the secretions in that vicinity. It is a native of Mexico, growing among the mountains, and collected after the annual rain commences (about July), when it bears dark green leaves, and small white flowers, the stem being covered with a species of gum of peculiar fragrance. One of our consuls in Mexico writes of the death of a man named Simon Anclos, whom, "common report set down for 100 years old; but an old man (85), called Surayo, who had long known Anclos, says that he (Anclos) was *ya un anciana*, while he (Surayo) was yet a boy, and was then old enough to be his grandfather. There are a great many such in this country. I do not mean to say or intimate that damiana does it all, but only this fact, that very many of those old stagers do sire children, as old Anclos did, up to the last—some of them having two or three dozen legitimates, without counting the outsiders. It is the climate, perhaps, but I think it almost too much to put it all down to climate."

The consul sent only new sprouts and leaves, stating that the wood was only a dead investment; but the root is said to possess the same virtues as the leaf. The best damiana bears a white blossom and a small leaf, while another inferior kind has a yellow blossom and a large leaf.

We gather the above information from a paper by Dr. J. J. Caldwell, of Balti-

more, published in the "Virginia Medical Monthly" for May. Dr. Caldwell also reports some cases in which great benefit was derived from the tonic and aphrodisiac properties of this new remedy, and calls the attention of the medical profession to the virtues of this "pretty little plant," which, from the above vague description of the consul, however, appears to be a tree or shrub.

Dr. Chas. McQuestin, of San Francisco, in a paper published in the "Pacific Medical and Surgical Journal" for July, endorses the above statements as to the aphrodisiac powers of damiana, and states that an infusion of one ounce of the dried leaves to a pint of water is the daily dose; it has an agreeable aromatic and slightly bitter taste. Dr. Caldwell has been using it in the form of tincture and fluid extract.

It is not our province to discuss the therapeutical value of a drug; but we must say that we miss in the above a description of this new claimant for medical favor, giving such characteristics as would enable the pharmacist to distinguish it from all other leaves. It is to be hoped that complete botanical specimens may soon reach this country, so that the true source of damiana may be established. Whether it will share the fate of anacahuite or cundurango, must, of course, be left undecided until more extensive experiments have been made with the drug known to be genuine.

"Doctored" Sugar.—The note which we copy below will explain to our readers how an inferior sugar is by some parties made to resemble good refined sugar. In explanation, we may state that a druggist of Philadelphia, on using granulated sugar, obtained from a New York house, in the preparation of syrup, noticed a blue-purple scum rising to the surface, which was skimmed off, when the syrup was observed to be of a pale straw color. On writing to the refiner for an explanation, the following answer was received:

"New York, June 23, 1875.

"We have to apologize for apparent neglect in not answering sooner to your letter sent to us a few days ago. It was mislaid by our Chemist, to whom we had handed it, and hence the delay. In reply, we beg to state, in regard to the coloring of our sugar, that we use 'blue' (ultramarine, an insoluble and perfectly harmless substance) as a complementary color to the 'yellow.' When sugar containing 'blue' is dissolved in a small quantity of water, the 'blue' gradually rises to the surface, and the 'yellow' color appears in the solution. As to the 'scum,' there can be none, provided the sugar has been dissolved in *pure water* and not over-heated."

This is not a new dodge, and is practiced in Europe as well as in this country, indigo and probably other coloring matters being used by some in place of ultramarine. The practice is the more reprehensible if such a doctored sugar is represented as first quality refined sugar, as which it is probably sold by some grocers without being noticed by the consumers. The presence of such colors is easily determined by removing a portion from the surface of boiling syrup, and passing it through white filtering-paper, which will retain the coloring matter. We are not aware that blue colors soluble in water have been used for the same purpose.

Fraudax.—This very appropriate *nom de plume* has been adopted by a writer to the Tennessee "Pharmacal Gazette," who, in the issue of that paper of June 23d, displays such a pitiful amount of ignorance of chemical literature, that we would honor this production, like other effusions of a similar nature which have appeared in the "Gazette," with profound silence, if it was not for his direct charge of mis-

statements having been made by us in an editorial note on page 251 of our June number. We do not quarrel with the peculiar views which *Fraudax* entertains of chemical nomenclature, reactions and manipulations, but shall content ourselves to refer to the closing sentences of his amusing communication, which we reproduce here, italicized as in the original:

"There are, however, the grossest kind of *misst*atements; and, having at hand no other evidence than the assertions of this wonderful ch*emist*, it will be well to take for granted that Mohr did *not* make himself so outrageously ridiculous as to affirm such nonsense as that starch does not turn blue in a mixture of ferrous sulphate and free iodine, or a mixture of ferric chloride and potassium iodide, since it is such an easy matter for almost any one, with perhaps the exception of this most wonderful ch*emist*, to convince himself to the contrary. A solution of ferrous sulphate, with the addition of only a trace of free iodine, or a solution of ferric chloride, with even a trace of potassium iodide, or a solution of potassium iodide, with a trace of ferric chloride, will *instantly*, on the addition of starch-paste, yield an *abundant* blue precipitate. In a mixture of ferric chloride and potassium iodide, the presence of *free* iodine amply manifests itself by its odor; even if only *loosely* combined, there could be *no* smell. We will, however, hear, even after this, of the *demonstrated* existence of ferric iodide, and bear witness to the disgusting spectacle of these would-be chemists making asses of themselves."

In the note referred to above, we have given the years in which the investigations of Mohr and Nicklès were made, and it would have been easy enough for any one, except such a self-sufficient critic and authority, to satisfy himself of the correctness of the quotations, by consulting the journals or annual reports for those years, which are specially devoted to chemistry. Fearing, however, that *Fraudax* might execute similar harlequinades upon the assumption that translators would missrepresent the facts ascertained by others, if not in direct accordance with his crude views or cruder experiments, we refer him to the periodicals where the papers cited have been originally published, and trust that he may profit from their perusal, or demonstrate to his own satisfaction that in both cases the editors and printers have been guilty of making misstatements in publishing detailed accounts of experiments, in which *Fraudax* is unable to succeed. Mohr's paper appeared originally in vol. cv, (1858) page 53, of "Annalen der Chemie und Pharmacie," edited by Friedrich Woehler, Justus Liebig and Hermann Kopp; and Nicklès' essay was first published in full on page 161, vol. v, 4th ser. (1865) of "Annales de Chimie et de Physique," edited by Chevreul, Dumas, Pelouze, Boussingault and Regnault. We would also suggest to *Fraudax* that the perusal of the writings of Berzelius, Liebig, Otto, Dumas, Graham, Gregory, Watts and others, would be likely to give him a little information, concerning ferric iodide and other allied subjects.

Our apologies are due to our readers for deviating, in this instance, from our course, in refering to such an attack, and while promising that we shall not trouble them again with a notice of such scholarly emanations, we leave them to judge as to whether this anonymous *Fraudax* has not been playing Dogberry with the most unqualified success.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

Proceedings of the American Academy of Arts and Sciences. New Series, Vol. II, (Whole Series, Vol. X). From May, 1874, to May, 1875. Boston: Press of John Wilson & Son, 1875. 8vo, pp. 535.

Among the many valuable papers of this volume we notice botanical essays by Prof. Asa Gray, Sereno Watson, and W. G. Farlow; contributions from the phys-

ical laboratories of Harvard College and of the Massachusetts Institute of Technology, and a number of papers on subjects connected with physics, chemistry mineralogy, algebra, &c.

Forty sixth Annual Report of the Board of Commissioners of Public Schools to the Mayor and City Council of Baltimore. 8vo, pp. 188.

A well-digested report, containing much information to the friends of education concerning the public schools of the Monumental City.

Bulletin of the Bussey Institution (Jamaica Plain, Boston), part IV. Cambridge: Press of John Wilson & Son. 1875. 8vo, pp. 88.

It contains a paper by Prof D. D. Slade on "Applied zoölogy, and its importance to the practical agriculturist;" the "Report of the director of the Arnold arboretum;" "On the potato rot," by Prof. W. G. Farlow, and several essays detailing researches in agricultural chemistry, by Prof. F. H. Storer.

Medical Addresses. By Benjamin Eddy Cotting, A.M., M.D. Boston: David Clapp & Son. 1875. 12mo, pp. 123.

The addresses which were delivered before the Massachusetts Medical Society are entitled: "Nature in disease;" "Disease, a part of the plan of creation," and "My first question as a medical student—its solution a sure basis for rational therapeutics." About 30 pages of explanatory notes and notes of reference are appended.

Fourteenth Annual Report of the City Hospital to the Mayor of Cincinnati, for the year ending December 31st, 1874. 8vo, pp. 56.

This official report gives a full account of this hospital, and the expenses connected therewith during the past year. We learn that the total number of patients treated was 6,597; the prescriptions put up, 29,053, at an actual cost of $5,313.15, and the total expenses, $85,589 48, from which sum $10,343.63 is to be deducted as having been received from pay patients, &c.

On Spasmodic Urethral Stricture. By F. N. Otis, M.D., Clinical Professor of Genito-urinary Diseases at the College of Physicians and Surgeons, New York. G. P. Putnam's Sons. 1875. 8vo, pp. 15.

A reprint from the "Archives of Dermatology."

Untersuchungen aus dem Pharmaceutischen Institute in Dorpat. Von Ed. Marquis. 8vo, pp. 22.

Researches from the Pharmaceutical Institute at Dorpat.

This pamphlet contains the interesting essay on "Sarsaparilla," of which a short abstract has been given on page 264 of our June number.

Gmelin-Kraut's Handbuch der Chemie. Anorganische Chemie. Sechste ungearbeitete Auflage. Heidelberg: Carl Winter's Universitäts-Buchhandlung.

Since our last notice of this new edition now in progress of publication (*see* "Amer. Journ. Pharm.," 1874, p. 494), the following numbers have appeared: Nos. 4 and 5 of vol. I, part I, treating of the physical laws relating to gases, and containing, also, the beginning of the chapter on crystallography; Nos. 1 to 4 of vol.

II, treating of the metals potassium, rubidium, cæsium, sodium, lithium and barium, and Nos. 11 to 16 of vol. III, which are devoted to the compounds of mercury, and to the following metals and their compounds, viz., silver, gold and platinum.

Medicinal Plants. Being figures with accompanying botanical descriptions and an account of the properties and uses of the principal plants employed in medicine. By Robert Bentley, F.L.S., and Henry Trimen, M.B., F.L.S. London: J. & A. Churchill.

The name of Professor Bentley in connection with this publication is a sufficient guarantee that the illustrations as well as the descriptions, &c., will be of unexceptionable character. The work is intended to represent all the plants officinal in the "British Pharmacopœia" with the addition of some others included in the "United States Pharmacopœia" or that of India, or in common use in different parts of Europe. It will be published in parts, each containing eight colored plates, size, 6¾ by 9½ inches, with accompanying text, the price of each part being 5*s*. The numbers will be issued at monthly intervals, commencing October 1st, next, the entire work being completed with about 300 plates. We need not dwell upon the value of such a work to the student of botany and Materia Medica; but judging from the faithful execution of the specimen before us, we take great pleasure in recommending this work. The Agents for the United States are Messrs. Lindsay & Blakiston, Philadelphia.

Geo. P. Rowell & Co's American Newspaper Directory; containing Accurate Lists of all the Newspapers and Periodicals published in the United States and Territories, and the Dominion of Canada. New York: Geo. P. Rowell & Co., publishers, 1875. 8vo, pp. 984.

This is the seventh edition of this Directory, the increased size of which shows that it is appreciated by the publishers of periodicals and by advertisers. We learn from the preface that 8348 periodicals were issued, at the beginning of 1875, in the above-named countries, an increase of 564 over the previous year. An unusual number of newspapers have been reduced in size, changed proprietorship, or suspended publication, during the past year, indicating that it has not been one of prosperity, notwithstanding the fact that the actual increase in the number printed has exceeded any previous year since the establishment of the Directory.

The largest increase of periodicals was in the following States: Indiana, 84; Iowa, 55; Illinois, 54; Missouri, 49; Pennsylvania, 38; Dominion of Canada, 33; Ohio, 32; New York, 31, &c. Three States publish the same number as the year previous; and in three States the number has decreased.

Report of the Twenty-seventh Exhibition of American Manufactures, held in the City of Philadelphia, from October 6th to November 12th, 1874, by the Franklin Institute, of the State of Pennsylvania, for the Promotion of the Mechanic Arts. Philadelphia. 8vo, pp. 284.

On pages 533 to 537 of our last volume will be found a report on those articles exhibited at the Franklin Institute Fair which are of special interest to the pharmacist. The volume before us contains the reports of the judges of the different classes, the closing address of the president, and a very excellent report detailing the observations made during the trial experiments with the steam boilers on exhibition.